DOS-III RELOCATING LOADER (LOADR)
(24308A - REV. 1419)

BINARY TAPE	24308-60001
SOURCE TAPES	24308-80001
	24308-80002
	24308-80003
	24308-80004
	24308-80005
	24308-80006
	24308-80007
SOURCE LISTING	24308-90001

JOB MULREANY TIME=0226 MIN. 23.0 SECS.

0001 ASMB,L,X,C,N,R,B
** NO ERRORS*

```
0001                    ASMB,L,X,C,N,R,B
0003  00000                   NAM LOADR,3,0
0004                          EXT EXEC
0005                          ENT LOADR
0006                          SUP
0007*
0008*
0009*     THE DISC OPERATING SYSTEM RELOCATING LOADER IS USED TO
0010*  RELOCATE BINARY PROGRAMS TO ABSOLUTE CODE THAT ARE TO BE RUN IN
0011*  THE USER AREA OF THE SYSTEM. THE RELOCATABLE BINARY MAY COME
0012*  FROM THE D.O.S. ASSEMBLER, FORTRAN, AND/OR ALGOL. THESE BINARY
0013*  PROGRAMS MAY BE LOADED FROM BINARY TAPES, JOB BINARY FILE OR USER
0014*  SPECIFIED FILE(S).
0015*
0016*     PROGRAMS CAN BE MADE TO BE MADE UP OF A -MAIN- PROGRAM WITH OR
0017*  WITHOUT PROGRAM SEGMENTS. PROGRAMS CAN BE MADE TO RUN UNDER
0018*  CONTROL OF -DEBUG- ROUTINE, REQUESTED FORTRAN RELOCATABLE BINARY
0019*  LIBRARY ROUTINES ARE AUTOMATICALLY APPENDED TO THE END OF THE
0020*  PROGRAMS. A FRESH COPY OF -DEBUG- SHALL BE APPENDED TO EACH
0021*  SEGMENT BY THE LOADER IF THE DEBUG OPTION IS SELECTED.TO INSURE
0022*  THAT THE SEGMENT, AS WELL AS -MAIN- , RUNS UNDER CONTROL OF
0023*  -DEBUG-
0024*
0025*     THE ABSOLUTE CODE IS PLACED ON THE DISC IMMEDIATELY FOLLOWING
0026*  THE END OF THE LAST USER FILE. THE ABSOLUTE CODE CANNOT EXCEED
0027*   THE USER AREA CORE SIZE. THE BASE PAGE LINKAGES, IF ANY ARE
0028*  REQUIRED, ARE PLACED ON THOSE SECTORS OF DISC TRACK WHICH FOLLOW
0029*  THE -MAIN- OR -SEGMENT- FOR THE PROGRAM.
0030*
0031*     THE USER DIRECTORY IS UPDATED FOR EACH PROGRAM -MAIN- OR
0032*  -SEGMENT- AND THE USER AREA BOUNDARY VALUE IS UPDATED.
```

```
0034*      THE RELOCATING LOADER PERMITS SEVERAL LOADING OPTIONS ENTERED
0035*  VIA,
0036*          :PROG,LOADR(,L,M,N,O,P)
0037*
0038*          WHERE
0039*
0040*                L IS SECONDARY INPUT DEVICE LOGICAL UNIT.  IF L
0041*                  NOT SPECIFIED THEN INPUT FROM JBIN AREA ONLY.
0042*                  IF 2, THEN FROM JBIN AND USER FILES ONLY
0043*                  IF NOT 0 OR 2, THEN FROM JBIN, USER FILES, AND
0044*                  PAPER TAPE FROM LOGICAL UNIT L
0045*                M IS LIST OUTPUT DEVICE LOGICAL UNIT NUMBER.  IF NOT
0046*                  SPECIFIED, THEN 6 IS ASSUMED.
0047*                N IS NO DEBUG/DEBUG OPTION. 0 IS ASSUMMMED IF NOT
0048*                  SPECIFIED.
0049*                O IS CURRENT/BASE PAGE
0050*                  LINKING OPTION. 0 IS
0051*                  ASSUMED IF NOT SPECIFIED.
0052*                P IS PROGRAM BOUNDS OPTION. 0 IS
0053*                  ASSUMED IF NOT SPECIFIED.
```

```
0055*     THE RELOCATABLE LOADER FUNCTIONS AS FOLLOWS:
0056*
0057*        (1). PROCESSING OF CONTROL INPUT SPECIFIED FILES (INCLUDES
0058*             JOB BINARY FILE AND SPECIFIED USER FILES)
0059*        (2). PROCESSING BINARY PROGRAMS INPUT FROM THE SECONDARY
0060*             INPUT DEVICE.
0061*        (3). SEARCH RELOCATABLE LIBRARY TO ATTEMPT TO SATISFY
0062*             UNDEFINED EXTERNAL REFERENCES.
0063*        (4). GENERATE ABSOLUTE CODE ON DISC FOR MAIN AND SEGMENTS
0064*             AND UPDATE USER DIRECTORY AND USER-WORK AREA BOUNDARY.
0065*
0066*     TWO TABLES ARE GENERATED BY THE RELOCATING LOADER WHEN
0067*  ENCOUNTERING NAM AND ENT/EXT RECORDS OF THE RELOCATABLE BINARY
0068*  PROGRAMS ON USER FILE, JOB BINARY FILES, AND PROGRAMS INPUT VIA
0069*  SECONDARY INPUT DEVICE. THE TABLES ARE :
0070*
0071*        (1). IDENT TABLE FOR PROGRAM NAME NAME ENTRIES
0072*        (2). LOADER SYMBOL TABLE FOR ENT/EXT ENTRIES
0073*
0074*  IDENT TABLE FORMAT(ID)
0075*
0076*     WORD 1:  ID1 - NAME 1,2
0077*     WORD 2:  ID2 - NAME 3,4
0078*     WORD 3:  ID3 - NAME 5,USEAGE FLAG
0079*    WORD4:  ID4 - BIT15 IS DISC LOC FLAG; REM FOR COMMON LENGTH
0080*     WORD 5:  ID5 - DISC ADDRESS
0081*     WORD 6:  ID6 - (15)=MAIN/SUBROUTINE ; (6-0)=TYPE
0082*     WORD 7:  ID7 - DISC LENGTH ; USER MAIN IDENT ADDR FOR SEGMENTS
0083*
0084*  LOADER SYMBOL TABLE FORMAT(LST)
0085*
0086*     WORD 1:  LST1 - NAME 1,2
0087*     WORD 2:  LST2 - NAME 3,4
0088*     WORD 3:  LST3 - NAME 5,ORDINAL
0089*     WORD 4:  LST4 - IDENT ADDRESS
0090*     WORD 5:  LST5 - BP LINK ADDRESS
0091*
0092*  PROGRAM TYPES THAT MAY BE LOADED:
0093*
0094*    0: TREATED AS USER MAIN RELOCATABLE BINARY PROGRAMS
0095*     3: USER MAIN RELOCATABLE BINARY PROGRAM
0096*     4: DEVICE DRIVER RELOCATABLE BINARY PROGRAMS
0097*     5: USER SEGMENT RELOCATABLE BINARY PROGRAMS
0098*     6: RELOCATABLE FORTRAN LIBRARY PROGRAMS
0099*    7: RELOCATABLE USER BINARY UTILITY PROGRAMS
0100*     UPON COMPLETION OF TABLE GENERATION FROM STEP (1) AND (2)
0101*  ABOVE, A CHECK IS MADE FOR ANY UNDEFINED EXTERNAL REFERENCES.
0102*  IF THERE ARE ANY, THESE MAY BE ENTERED FROM SECONDARY INPUT
0103*  DEVICE OR USER FILE, OR USER MAY SPECIFY THAT LOADING IS TO TAKE
0104*  PLACE WITH UNDEFINED EXTERNALS.
0105*     A SEARCH IS MADE IN USER DIRECTORY FOR MAIN PROGRAM
0106*  NAME AND SEGMENT NAMES TO BE LOADED. IF DUPLICATE NAMES OCCUR,
0107*  THE LOADER IS ABORTED. THE ABSOLUTE CODE FOR MAIN IS GENERATED
0108*  AND PLACED ON DISC. THE USER DIRECTORY IS UPDATED WITH THE NEW
0109*  FILE ENTRY AND THE USER/WORK AREA BOUNDARY VALUE IS UPDATED. THE
0110*  ABSOLUTE CODE FOR REQUESTED SEGMENTS ARE GENERATED AND FILE NAME
```

```
0111*  IS ENTERED INTO DIRECTORY.
0112*  ERROR DIAGNOSTICS
0113*       L01 - CHECKSUM ERROR
0114*       L02 - ILLEGAL RECORD
0115*       L03 - MEMORY OVERFLOW
0116*       L04 - BASE PAGE LINKAGE OVERFLOW
0117*       L05 - SYMBOL TABLE OVERFLOW
0118*       L06 - MAIN OR SEGMENT NAME ALREADY IN USER OR SYS DIRECTORY
0119*       L07 - DUPLICATE ENTRY POINTS
0120*       L08 - NO TRANSFER ADDRESS PRESENT
0121*       L09 - RECORD OUT OF SEQUENCE
0122*       L10 - OUT OF DIRECTORY OR WORK DISC SPACE
0123*       L11 - PROGRAM IDENT OVERFLOW
0124*       L12 - SPECIFIED FILE NOT IN USER DIRECTORY
0125*       L13 - PROGRAM NAME DUPLICATION
0126*       L14 - BASE PAGE LENGTH NON-ZERO
0127*       L15 - SEGMENT LOADED BEFORE MAIN
0128*       L16 - PROGRAM OVERLAY ERROR
0129*       L17 - ILLEGAL LIBRARY RECORD
0130*       L18 - ILLEGAL BASE PAGE BOUND
0131*       L19 - ILLEGAL MAIN PROGRAM BOUND
```

```
0133*
0134*  PROCESS PROG PARAMETERS
0135*
0136  00000 160001  LOADR LDA B,I       INPUT UNIT
0137  00001 002002        SZA
0138  00002 033542R       IOR M300          SET FOR VARIABLE BINARY INP
0139  00003 073415R       STA PGMIN
0140  00004 006004        INB
0141  00005 160001        LDA B,I       LIST OUTPUT UNIT
0142  00006 002003        SZA,RSS
0143  00007 026012R       JMP *+3           STANDARD UNIT 6
0144  00010 033440R       IOR M600          SET WRITE BITS
0145  00011 073462R       STA LISTU
0146  00012 006004        INB
0147  00013 160001        LDA B,I       NO DEBUG/DEBUG OPTION
0148  00014 073343R       STA DBFLG
0149  00015 006004        INB
0150  00016 160001        LDA B,I       CURRENT/BASE PAGE  LINK OPTION
0151  00017 073415R       STA CPL
0152  00020 006004        INB
0153  00021 160001        LDA B,I       BOUNDS/NO BOUNDS SPECIFICATION
0154  00022 050054        CPA .1
0155  00023 026653R       JMP STBND      YES - SET PROGRAM BOUNDS
0156  00024 060254        LDA SMFWA      NO - STORE SYSTEM BOUNDS
0157  00025 073457R       STA UMFWA           AS DEFAULT
0158  00026 060100        LDA SMLWA
0159  00027 073460R       STA UMLWA
0160  00030 060255        LDA SBFWA
0161  00031 073455R       STA UBFWA
0162  00032 060256        LDA SBLWA
0163  00033 073456R       STA UBLWA
0164*
0165*
0166*  SUPPRESS SYSTEM SEARCH OPTION
0167*
0168  00034 060331  LOAD1 LDA SSFLG     CHECK SYSTEM SEARCH FLAG
0169  00035 053506R       CPA ASCNO
0170  00036 026043R       JMP LO01      - NO, SO OK
0171  00037 073432R       STA SAVSS     SAVE SS FLAG
0172  00040 002400        CLA           CLEAR SS FLAG IN BASE PAGE
0173  00041 067507R       LDB XSSFL
0174  00042 016003R       JSB BPSTR
0175*
0176*  SET UP LST, IDENT, & BASE PAGE TABLES
0177*
0178  00043 060147  LO01  LDA EXPG7     GET END BOUND OF LOADER
0179  00044 073510R       STA BPBUF
0180*
0181  00045 063455R       LDA UBFWA     FWA OF USER BASE PAGE
0182  00046 073440R       STA TBREL
0183  00047 073412R       STA PBREL
0184  00050 003004        CMA,INA      LWA OF USER BASE PAGE BUFFER -
0185  00051 073330R       STA BPOIT
0186  00052 043456R       ADA UBLWA     # OF USER BASE PAGE AVAILABLE +
0187  00053 073322R       STA BP#       # OF BASE PAGE LINKAGES
0188  00054 043510R       ADA BPBUF     START OF BASE PAGE LINK BUFFER-
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0189  00055 073321R        STA BPEND     END OF USER BASE PAGE BUFFER
0190  00056 002004         INA           SET LOADER SYMBOL TABLE ADDRESS
0191  00057 073274R        STA BLST
0192  00060 073276R        STA PLST
0193  00061 063510R        LDA BPBUF
0194  00062 003004         CMA,INA
0195  00063 043455R        ADA UBFWA
0196  00064 073406R        STA NBPBF     FORM NEG BASE PAGE BUFFER ADDRESS
0197  00065 060045         LDA N6        SET PROGRAM IDENT TABLE ADDRESS
0198  00066 040100         ADA SMLWA
0199  00067 073304R        STA BIDNT
0200  00070 073306R        STA PIDNT
0201  00071 063322R        LDA BP#       CLEAR BASE PAGE LINKAGE BUFFER
0202  00072 003004         CMA,INA
0203  00073 073453R        STA WDCNT     SET CLEAR COUNTER
0204  00074 067510R        LDB BPBUF     SET CLEAR BUFFER ADDRESS
0205  00075 002400         CLA
0206  00076 170001         STA B,I       CLEAR LOCATION
0207  00077 006004         INB           INCREMENT BUFFER ADDRESS
0208  00100 037453R        ISZ WDCNT     SKIP-DONE CLEARING
0209  00101 026076R        JMP *-3       GO CLEAR NEXT LOCATION
0210*
0211*  VERIFY THAT THERE IS SUFFICIENT DISC AREA &
0212*     SET INITIAL DISC POINTERS
0213*
0214  00102 016001X        JSB EXEC      REQUEST WORK TRACK LIMITS
0215  00103 000110R        DEF *+5
0216  00104 000066         DEF .17
0217  00105 011353R        DEF DSKAD     FIRST WORK TRACK ADDRESS
0218  00106 005441R        DEF TR        LAST WORK TRACK ADDRESS
0219  00107 011443R        DEF TEMP      # SECTORS/TRACK ADDRESS
0220  00110 063353R        LDA DSKAD     CHECK IF 3 WORK TRACKS AVAILABLE
0221  00111 003004         CMA,INA
0222  00112 043441R        ADA TR
0223  00113 070001         STA B
0224  00114 040051         ADA N2
0225  00115 002020         SSA
0226  00116 026330R        JMP DRCHA     ERROR-NOT 3 WORK TRACKS
0227  00117 063441R        LDA TR
0228  00120 002004         INA
0229  00121 001727         ALF,ALF
0230  00122 072757R        STA DTRTM     FORM LAST LEGAL WORK TRACK+1
0231  00123 063353R        LDA DSKAD
0232  00124 003004         CMA,INA
0233  00125 043441R        ADA TR        # OF SCRATCH TRACKS AVAILABLE
0234  00126 001100         ARS           DIVIDE AREA IN HALF
0235  00127 043353R        ADA DSKAD
0236  00130 001727         ALF,ALF             TRACK ADDRESS
0237  00131 073361R        STA DSKSS     SET BIN SCRATCH
0238  00132 001727         ALF,ALF       RIGHT JUSTIFY
0239  00133 064155         LDB SYSSC     COMPARE SYS SC TO USER SC
0240  00134 054161         CPB CUDSC
0241  00135 026141R        JMP *+4       COMPARE SO USER NOT ON SYS
0242  00136 060154         LDA DISCO     GET LAST TRACK AVAILABLE
0243  00137 010076         AND M3777
0244  00140 002004         INA
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```
0245   00141 003004          CMA,INA        MAKE NEG
0246   00142 073362R         STA DSKTM
0247   00143 060157          LDA UDNTS      USER DISC NEXT AVAILABLE T/S
0248   00144 073352R         STA DSKAB           TRACK/SECTOR ADDRESS
0249*
0250*  INITIALIZE IDENT & LST TABLES
0251*     PUT EXEC ENTRY IN LST
0252*
0253   00145 016230R         JSB INLST     INITIALIZE LIST
0254   00146 016234R         JSB LSTX       SET CURRENT LST ADDRESSES
0255   00147 000000          NOP
0256   00150 016261R         JSB INIDX     INITIALIZE PROGRAM IDENT LIST
0257   00151 016265R         JSB IDX       SET CURRENT IDENT ADDRESSES
0258   00152 000000          NOP
0259   00153 063475R         LDA AEXEC     PUT EXEC INTO LST
0260   00154 173277R         STA LST1,I
0261   00155 063476R         LDA AEXEC+1
0262   00156 173300R         STA LST2,I
0263   00157 063477R         LDA AEXEC+2
0264   00160 173301R         STA LST3,I
0265   00161 002400          CLA
0266   00162 173302R         STA LST4,I
0267   00163 173303R         STA LST5,I
0268   00164 063275R         LDA TLST
0269   00165 073276R         STA PLST
```

```
0271*
0272*  PROCESS JBIN RELOCATABLE FILES
0273*
0274  00166 060101        LDA JBINS    CHECK IF ANY JOB BINARY PROGRAMS
0275  00167 002003        SZA,RSS
0276  00170 026242R       JMP RCNTL    NO
0277  00171 073353R       STA DSKAD
0278  00172 050102        CPA JBINC    CHECK IF ANY STORED
0279  00173 026242R       JMP RCNTL    NO
0280  00174 060102        LDA JBINC    COMPUTE # SECTORS USED IN CURRNT
0281  00175 010074        AND M377        TRACK
0282  00176 073334R       STA COUNT
0283  00177 060102        LDA JBINC
0284  00200 001727        ALF,ALF
0285  00201 010074        AND M377
0286  00202 002004        INA
0287  00203 073441R       STA TR
0288  00204 016001X JBN10 JSB EXEC     CHECK IF NEXT TRACK HOLDS BINARY
0289  00205 000212R       DEF *+5           DATA
0290  00206 007434R       DEF .16
0291  00207 000054        DEF .1       # TRACKS
0292  00210 005441R       DEF TR        STARTING TRACK
0293  00211 005440R       DEF SECT      ACTUAL TRACK
0294  00212 063440R       LDA SECT      CHECK IF STARTING = ACTUAL
0295  00213 053441R       CPA TR
0296  00214 026221R       JMP JBN20    YES-SO BINARY TRACK
0297  00215 002003        SZA,RSS      ZERO INDICATES END OF DISC
0298  00216 026226R       JMP JBN30    NO MORE BINARY TRACKS
0299  00217 073441R       STA TR
0300  00220 002001        RSS
0301  00221 037441R JBN20 ISZ TR        INCREMENT TRACK #
0302  00222 063334R       LDA COUNT     UPDATE CUMULATIVE SECTOR #
0303  00223 040116        ADA SECTR
0304  00224 073334R       STA COUNT
0305  00225 026204R       JMP JBN10    GO CHECK NEXT TRACK
0306  00226 002400  JBN30  CLA           READ SYSTEM DISC
0307  00227 073413R       STA PCNTT
0308  00230 060055        LDA .2        READ SYSTEM DISC
0309  00231 073351R       STA DISCX
0310  00232 002404        CLA,INA       YES
0311  00233 073442R       STA TDIR     SET JBIN SEARCH FLAG
0312  00234 016362R       JSB SYMBL     SET LST AND IDENT FROM JBIN AREA
0313*
0314*  PROCESS USER RELOCATABLE FILES
0315*
0316  00235 002400  RCNTP CLA           SET DISC DIRECTION TO FORWARD
0317  00236 073442R       STA TDIR
0318  00237 063415R       LDA PGMIN     CHECK IF USER FILES/PAPER TAPE
0319  00240 002003        SZA,RSS      TO BE INPUT
0320  00241 026511R       JMP RCN50    NO, SO GO LOAD
0321  00242 063372R RCNTL LDA FIOPT     CHECK IF FILE TO BE ENTERED FROM
0322  00243 002003        SZA,RSS           SYSTEM TELETYPE
0323  00244 026251R       JMP RCN02    MAYBE-SO MAKE FURTHER CHECK
0324  00245 060112        LDA SYSTY    YES
0325  00246 033543R       IOR M400      SET ECHO BIT
0326  00247 073443R       STA TEMP
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```
0327  00250 026261R        JMP RCN04     GO OUTPUT MESSAGE
0328  00251 060111  RCN02  LDA BATCH     COMPARE BATCH AND SYS TTY DEVICE
0329  00252 050112        CPA SYSTY
0330  00253 033543R        IOR M400           SET ECHO BIT
0331  00254 073443R        STA TEMP
0332  00255 060111        LDA BATCH     CHECK IF BATCH IS SYS TELETYPE
0333  00256 050112        CPA SYSTY
0334  00257 002001        RSS           YES
0335  00260 026267R        JMP RCN05     NO
0336  00261 016001X RCN04  JSB EXEC      OUTPUT MESSAGE:
0337  00262 000267R        DEF *+5            -ENTER FILE NAME(S) OR /E
0338  00263 000055        DEF .2
0339  00264 000054        DEF .1
0340  00265 000346R        DEF CMES
0341  00266 007432R        DEF .12
0342  00267 016001X RCN05  JSB EXEC      REQUEST INPUT FROM BATCH OR SYS
0343  00270 000275R        DEF *+5
0344  00271 000054        DEF .1              READ REQUEST
0345  00272 011443R        DEF TEMP            CONTROL WORD
0346  00273 011206R DATB   DEF DATAB           DATA BUFFER ADDRESS
0347  00274 007426R        DEF N72             CHARACTER COUNT
0348  00275 006003        SZB,RSS       SKIP-INPUT IN
0349  00276 026242R        JMP RCNTL     GO TO READ NEXT CONTROL INPUT
0350  00277 007004        CMB,INB
0351  00300 076625R        STB NEGPM     SAVE NEG INPUT COUNT
0352  00301 062273R        LDA DATB
0353  00302 000066        CLE,ELA
0354  00303 072626R        STA PMBUF     SET INPUT BUF CHAR ADDR
0355  00304 063206R        LDA DATAB     CHECK IF INPUT IS  /E
0356  00305 053454R        CPA SLSHE
0357  00306 026511R        JMP RCN50     YES - SO DONE
0358  00307 016471R RCN10  JSB GETP      GET ONE CONTROL PARAMETER
0359  00310 073444R        STA TERMN      SAVE TERMINATOR FLAG
0360  00311 053454R        CPA SLSHE
0361  00312 026511R        JMP RCN50
0362  00313 016001X        JSB EXEC      CHECK IF FILE IN USER DIRECTORY
0363  00314 000320R        DEF *+4
0364  00315 007435R        DEF .18
0365  00316 000214R        DEF PBUF      ADDRESS OF FILE NAME
0366  00317 011334R        DEF COUNT     # OF SECTORS IN FILE
0367  00320 073353R        STA DSKAD     SAVE TRACK/SECTOR ADDR OF FILE
0368  00321 002400        CLA
0369  00322 073442R        STA TDIR
0370  00323 063334R        LDA COUNT
0371  00324 002002        SZA
0372  00325 026334R        JMP RCN30
0373  00326 063501R        LDA ERR12     PRINT UNDEFINED FILE ERROR CODE
0374  00327 016344R        JSB ERROR
0375  00330 060060        LDA .5         PRINT UNDEFINED FILE NAME
0376  00331 067562R        LDB DFPBF
0377  00332 016331R        JSB SYOUT
0378  00333 026631R        JMP ABORT      ABORT LOADER
0379  00334 016556R RCN30  JSB PROGL     CHECK IF PROGRAMS SPECIFIED
0380  00335 017777R        JSB SETCR      READ USER DISC
0381  00336 016362R        JSB SYMBL      ENTER ENT/EXT-PROGRAM IDENTS
0382  00337 063444R        LDA TERMN     GET TERMINATION SYMBOL
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```
0383  00340 053454R        CPA SLSHE     END OF PARAMETERS?
0384  00341 026511R        JMP RCN50     YES
0385  00342 062625R        LDA NEGPM
0386  00343 002003         SZA,RSS       END OF STATEMENT?
0387  00344 026242R        JMP RCNTL     YES-READ NEXT STATEMENT
0388  00345 026307R        JMP RCN10      GO TO PROCESS NEXT PARAMETER
0389  00346 042516  CMES   ASC 12,ENTER FILE NAME(S) OR /E
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0391*
0392*     SYMBL ROUTINE READS USER FILE OR JBIN FILE AND ADDS THESE
0393*  PROGRAMS TO THE PROGRAM LIST AND ALL ENT/EXT TO THE LST.
0394*  THE OPTION EXISTS TO ENTER ALL PROGRAMS FROM THE GR JUST
0395*  THOSE SPECIFIED. ALSO IS JBIN AREA, TRACK ADDRESS IS DECREMENTED
0396*  WHEN CROSSING TRACK BOUNDARIES RATHER THAN INCREMENTING.
0397*     CALLING SEQUENCE:
0398*         PRIOR TO ENTERING SET
0399*              DSKAD = STARTING TRACK/SECTOR OF FILE
0400*              COUNT = # SECTORS IN FILE
0401*              PCNTT = 0 IF ALL PROGRAMS IN FILE TO BE LOADED
0402*                    = N IF SPECIFIC PROGRAMS IN FILE TO BE LOADED
0403*              PLIST = PROGRAM NAMES LIST OF PROGRAMS TO BE LOADED
0404*                      (PCNTT NOT ZERO)
0405*              TDIR  = 0 IF USER FILE
0406*                    = 1 IF JBIN AREA
0407*
0408  00362 000000  SYMBL NOP
0409*
0410  00363 062362R       LDA SYMBL     SET UP RETURN ADDRESS FOR BLOCK
0411  00364 016017R       JSB SETUP       ROUTINE
0412  00365 063353R       LDA DSKAD
0413  00366 073543R       STA DSKNM     SET INITIAL NAM RECORD TR/SECT
0414  00367 072104R       STA BLKAD     SET INITIAL DISC ADDRESS
0415*
0416  00370 016032R       JSB BLOCK     INPUT 1ST BLOCK OF CODE
0417*
0418  00371 006400  SYM10 CLB           CLEAR WORDS/PROGRAM
0419  00372 076510R       STB W.PRG       COUNT
0420  00373 016107R       JSB FETCH     GET RECORD TYPE
0421  00374 050054        CPA .1        NAME RECORD?
0422  00375 002001        RSS           YES
0423  00376 026637R       JMP RCERR
0424*
0425  00377 063413R       LDA PCNTT     CHECK PROGRAMS SPECIFIED FLAG
0426  00400 002003        SZA,RSS       SKIP-YES
0427  00401 026443R       JMP SYM50
0428  00402 003004        CMA,INA
0429  00403 073453R       STA WDCNT   SET # PROG IN PLIST
0430  00404 063563R       LDA PLAD
0431  00405 073320R       STA AMAD      SET SEARCH ADDRESS
0432  00406 067337R SYM20 LDB CURAL     "B" POINTING TO
0433  00407 044055        ADB .2          PROGRAM NAME
0434  00410 163320R       LDA AMAD,I    CHECK IF NAME IN PLIST TABLE
0435  00411 150001        CPA B,I
0436  00412 002001        RSS           NAME 1,2 IN TABLE
0437  00413 026431R       JMP SYM30     NOT CURRENT PROG NAME
0438  00414 037320R       ISZ AMAD
0439  00415 006004        INB
0440  00416 163320R       LDA AMAD,I
0441  00417 150001        CPA B,I
0442  00420 002001        RSS           NAME 3,4 IN TABLE
0443  00421 026432R       JMP SYM30+1   NOT CURRENT PROG NAME
0444  00422 037320R       ISZ AMAD
0445  00423 006004        INB
0446  00424 160001        LDA B,I
```

```
0447  00425 013775          AND M1774
0448  00426 153320R         CPA AMAD,I
0449  00427 026443R         JMP SYM50      PROGRAM IN PLIST TABLE
0450  00430 026433R         JMP SYM30+2
0451  00431 037320R SYM30   ISZ AMAD       INCR PLIST ADDRESS
0452  00432 037320R         ISZ AMAD       INCR PLIST ADDRESS
0453  00433 037320R         ISZ AMAD       INCR PLIST ADDRESS
0454  00434 037453R         ISZ WDCNT     INCR PROG COUNT
0455  00435 026426R         JMP SYM20      GO TRY NEXT PROGRAM IN PLIST
0456  00436 016215R SYM40   JSB SKIP       SKIP OVER REST OF RECORD
0457  00437 016107R         JSB FETCH
0458  00440 050060          CPA .5         END RECORD?
0459  00441 026477R         JMP SYM75
0460  00442 026436R         JMP SYM40      NO-SO SKIP OVER REST OF RECORD
0461*
0462  00443 017402R SYM50   JSB NAM        PROCESS NAM RECORD
0463*
0464  00444 016215R SYM70   JSB SKIP       SKIP OVER REST OF RECORD
0465  00445 016107R         JSB FETCH
0466  00446 053055          CPA .2         ENT RECORD?
0467  00447 026503R         JMP SYENT      PROCESS ENTRY RECORD
0468  00450 053056          CPA .3         DBL RECORD?
0469  00451 026501R         JMP SYDBL        YES - FIND MAX
0470  00452 050057          CPA .4         EXT RECORD?
0471  00453 026504R         JMP SYEXT      PROCESS EXTERAL RECORD
0472  00454 050060          CPA .5         END RECORD?
0473  00455 002001          RSS
0474  00456 026637R         JMP RCERR      ILLEGAL RECORD TYPE
0475  00457 017747R         JSB END        PROCESS END RECORD
0476*
0477  00460 062510R         LDA W.PRG      GET # WORDS IN PROG
0478  00461 040057          ADA .4         ADD 4 MORE FOR REST OF END
0479  00462 005400          CLB             (FOR DIVIDE)
0480  00463 016002X         DIV .128       COMPUTE # SECTOS IN PROGRAM
0481  00465 006002          SZB             FROM # WORDS
0482  00466 002004          INA
0483  00467 072507R         STA #SECT
0484*
0485  00470 163316R         LDA ID7,I     STORE #TRACKS OR MAIN SEG
0486  00471 002003          SZA,RSS
0487  00472 062507R         LDA #SECT      GET CURRENT PROG SECTOR COUNT
0488  00473 067442R         LDB TDIR       FORWARD OR BACKWARD DIRECTION?
0489  00474 006002          SZB            FORWARD
0490  00475 003004          CMA,INA        BACKWARD-COMPLEMENT # SECTORS
0491  00476 173316R         STA ID7,I
0492*
0493  00477 016215R SYM75   JSB SKIP       SKIP REST OF END RECORD
0494  00500 026371R         JMP SYM10      PROCESS NEXT PROGRAM
0495*
0496*
0497  00501 017544R SYDBL   JSB DBL        PROCESS DBL RECORD
0498  00502 026444R         JMP SYM70
0499*
0500  00503 003401  SYENT   CCA,RSS       ENT
0501  00504 002400  SYEXT   CLA           EXT
0502  00505 017565R         JSB EN.XT      PROCESS ENT/EXT RECORDS
```

```
0503   00506 026444R        JMP SYM70
0504*
0505   00507 000000  #SECT NOP            # SECTORS/PROGRAM
0506   00510 000000  W.PRG NOP            # WORDS/PROGRAM
```

```
0508*
0509*  PROCESS RELOCATBLE BINARY INPUT
0510*
0511  00511 060055  RCN50 LDA .2         SET FOR SYSTEM DISC
0512  00512 073351R       STA DISCX
0513*
0514  00513 063361R       LDA DSKSS      SET SCRATCH AREA AS DISC ADDRESS
0515  00514 073353R       STA DSKAD        FOR OUTPUTTING RELOCATABLES
0516*
0517  00515 063415R       LDA PGMIN      CHECK IF ANY INPUT FROM SECONDAR
0518  00516 002003        SZA,RSS             INPUT DEVICE
0519  00517 026761R       JMP LODLB          NO-GO CHECK LIBRARY PROGRAM
0520  00520 010072        AND M77
0521  00521 050055        CPA .2
0522  00522 026761R       JMP LODLB      NO PAPER TAPE TO BE LOADED
0523*
0524*     READ IN BINARY RELOCATABLE INPUT FROM SECONDARY DEVICE AND
0525*  STORE IN PACKED FORMAT ONTO DISC.
0526*     NAM RECORDS ARE ENTERED INTO PROG NAME NAME TABLE AND ENT/EXT
0527*  ARE ENTERED INTO LOADER SYMBOL TABLE.
0528*
0529  00523 003400  RCN60 CCA
0530  00524 073417R       STA PLFLG      SET LOADING FLAG
0531*
0532  00525 063546R       LDA N128
0533  00526 073347R       STA DCNT       INITIALIZE DBUF COUNT
0534  00527 066773R       LDB AABUF
0535  00530 077335R       STB CURAD      INITIALIZE DBUF POINTER
0536  00531 016516R       JSB BUFCL      CLEAR DBUF
0537  00532 002400        CLA            SET FOR 1ST OUTPUT BUFFER
0538  00533 072750R       STA ABFLG
0539  00534 072450R       STA FIRST
0540*
0541  00535 063306R       LDA PIDNT
0542  00536 072657R       STA SIDNT        OF CHECKSUM ERROR
0543  00537 063276R       LDA PLST       SAVE END OF LST TABLE
0544  00540 072656R       STA SLST
0545  00541 063353R       LDA DSKAD
0546  00542 072655R       STA SDSK
0547*
0548  00543 060065  TREAD LDA .10       PRINT -LOAD TAPE- ON SYS TTY
0549  00544 066660R       LDB MESLD
0550  00545 016331R       JSB SYOUT
0551  00546 016001X       JSB EXEC       SUSPEND PROGRAM
0552  00547 000551R       DEF *+2
0553  00550 000062        DEF .7
0554  00551 160001        LDA B,I
0555  00552 002002        SZA
0556  00553 026761R       JMP LODLB     GO TO CHECK IF LOAD LIBRARY
0557  00554 003400        CCA            SET EOT FLAG TO IGNORE EOT
0558  00555 073367R       STA ETFLG
0559*
0560  00556 016001X LDRIN JSB EXEC       READ INPUT FROM 2NDARY INPUT DEV
0561  00557 000564R       DEF *+5             DEVICE INTO LBUF
0562  00560 000054        DEF .1
0563  00561 011415R       DEF PGMIN
```

```
0564  00562 010206R        DEF LBUF
0565  00563 007547R        DEF .128
0566*
0567  00564 012566R        AND M240
0568  00565 002302         CCE,SZA          END OF FILE/TAPE?
0569  00566 000240  M240    OCT 240          -YES (CLE INSTRUCTION)
0570  00567 006042         SEZ,SZB          REC LNGTH=0?
0571  00570 026575R        JMP TESTR             YES, SO GO PROCESS RECORD
0572  00571 063367R        LDA ETFLG             NO, SO CHECK END OF TAPE
0573  00572 002002         SZA
0574  00573 026556R        JMP LDRIN        GO READ IN NEXT RECORD
0575  00574 026543R        JMP TREAD        OUTPUT -LOAD- AND READ IN RECORD
0576*
0577  00575 002400  TESTR   CLA              SET EOT FLAG = VALID EOT
0578  00576 073367R        STA ETFLG
0579*
0580  00577 067552R        LDB ALBUF
0581  00600 077337R        STB CURAL        INITIALIZE LBUF POINTER
0001  00601 063546R        LDA N128
0002  00602 073402R        STA LCNT         INITIALIZE LBUF COUNT
0003*
0004  00603 016107R        JSB FETCH        GET RECORD TYPE, CHK VALIDITY
0005*
0006  00604 073407R        STA TEMP1        SAVE RECORD TYPE
0007  00605 163337R        LDA CURAL,I      COMPUTE CHECKSUM
0008  00606 067337R        LDB CURAL
0009  00607 044055         ADB .2
0010  00610 140001         ADA B,I
0011  00611 006004         INB
0012  00612 037453R        ISZ WDCNT
0013  00613 026610R        JMP *-3
0014*
0015  00614 067337R        LDB CURAL        COMPUTED = ACTUAL CHECKSUM?
0016  00615 006004         INB
0017  00616 150001         CPA B,I
0018  00617 002001         RSS                YES -
0019  00620 026643R        JMP CHKER        - CHECKSUM ERROR
0020  00621 063407R        LDA TEMP1        RESTORE RECORD TYPE
0021*
0022  00622 067417R        LDB PLFLG
0023  00623 050054         CPA .1           TYPE = NAM RECORD ?
0024  00624 026666R        JMP NAMR              YES
0025  00625 006002         SZB
0026  00626 026641R        JMP NMERR        RECORD OUT OF SEQUENCE
0027  00627 050055         CPA .2           TYPE = ENT RECORD ?
0028  00630 026703R        JMP ENTR              YES
0029  00631 050056         CPA .3           TYPE=DBL RECORD?
0030  00632 026701R        JMP DBLR              YES
0031  00633 050057         CPA .4           TYPE = EXT RECORD ?
0032  00634 026704R        JMP EXTR         YES
0033  00635 050060         CPA .6
0034  00636 026707R        JMP ENDR
0035*
0036  00637 063467R RCERR   LDA ERR02        ILLEGAL RECORD ERROR
0037  00640 026630R        JMP ABRTX
0038*
```

```
0039  00641 063476R NMERR LDA ERR09    RECORD OUT OF SEQUENCE
0040  00642 026630R       JMP ABRTX
0041*
0042  00643 063466R CHKER LDA ERR01
0043  00644 016344R       JSB ERROR     OUTPUT LO1 MESSAGE
0044  00645 062657R       LDA SIDNT     RESTORE IDENT & LST TABLES TO
0045  00646 073306R       STA PIDNT       THEIR INITIAL STATE
0046  00647 062656R       LDA SLST
0047  00650 073276R       STA PLST
0048  00651 062655R       LDA SDSK
0049  00652 073353R       STA DSKAD
0050  00653 016635R       JSB SET       SET SIMULATED END-OF-TAPE
0051  00654 026523R       JMP RCN60     TRY ENTERING PROGRAM AGAIN
0052*
0053  00655 000000  SDSK    NOP         SAVED DISC ADDRESS
0054  00656 000000  SLST    NOP         SAVED END OF LST TABLE
0055  00657 000000  SIDNT   NOP         SAVED END OF IDENT TABLE
0056  00660 000661R MESLD   DEF *+1
0057  00661 046117          ASC 5,LOAD TAPE

0059  00666 006003  NAMR    SZB,RSS
0060  00667 026641R       JMP NMERR     RECORD OUT OF SEQUENCE
0061*
0062  00670 006400        CLB
0063  00671 077366R       STB DSCNT     CLEAR DISC SEGMENT COUNT
0064  00672 077333R       STB CNFLG     CLEAR DISC SEGMENT COUNT FLAG
0065  00673 077417R       STB PLFLG     SET PLFLG = NOT LOADING
0066  00674 063353R       LDA DSKAD     SET DISC ADDRESS OF NAM RECORD
0067  00675 073543R       STA DSKNM       FOR DIRECTORY ENTRY,
0068*
0069  00676 017402R       JSB NAM       PROCESS NAM RECORD
0070*
0071  00677 016715R OUTR    JSB DWRIT     PACK RECORD, OUTPUT TO DISC
0072  00700 026556R       JMP LDRIN     GO READ NEXT RECORD


0074  00701 017544R DBLR    JSB DBL       PROCESS DBL RECORD
0075  00702 026677R       JMP OUTR      OUTPUT DBL RECORD TO DISC


0077  00703 003401  ENTR    CCA,RSS
0078  00704 002400  EXTR    CLA
0079  00705 017565R       JSB EN,XT     PROCESS ENT/EXT RECORDS
0080  00706 026677R       JMP OUTR      OUTPUT RECORD TO DISC


0082  00707 003400  ENDR    CCA
0083  00710 073417R       STA PLFLG
0084  00711 073333R       STA CNFLG
0085  00712 016715R       JSB DWRIT     WRITE END RECORD ON DISC
0086*
0087  00713 017747R       JSB END       PROCESS END RECORD
0088  00714 026556R       JMP LDRIN
```

```
0090*
0091*     DWRIT PACKS THE CONTENTS OF LBUF INTO DBUF AND DUMPS
0092*   DBUF WHEN IT CONTAINS 128 WORDS OF RELOCATABLE INPUT.
0093*
0094  00715 000000  DWRIT NOP
0095  00716 067552R       LDB ALBUF      GET ADDRESS OF LBUF
0096  00717 076760R       STB LTEMP
0097  00720 062206R       LDA LBUF       GET RECORD LENGTH
0098  00721 001727        ALF,ALF
0099  00722 003004        CMA,INA
0100  00723 073402R       STA LCNT
0101  00724 162760R LTOD  LDA LTEMP,I    GET WORD FROM LBUF AND
0102  00725 173335R       STA CURAD,I    SET WORD INTO DBUF
0103  00726 037347R       ISZ DCNT
0104  00727 026732R       JMP GETL
0105  00730 016377R       JSB DDOUT      OUTPUT IF BUFFER FULL
0106  00731 002001        RSS
0107  00732 037335R GETL  ISZ CURAD      INCR DBUF ADDRESS
0108  00733 036760R       ISZ LTEMP      INCR LBUF ADDRESS
0109  00734 037402R       ISZ LCNT
0110  00735 026724R       JMP LTOD       GO MOVE NEXT WORD
0111  00736 063333R       LDA CNFLG      TEST END FLAG
0112  00737 002003        SZA,RSS        SKIP IF END RECORD READ
0113  00740 026753R       JMP MAXWK      CHECK FOR OVERFLOW
0114  00741 063347R       LDA DCNT       CHECK IF ANY DATA IN BUFFER
0115  00742 053546R       CPA N128
0116  00743 002001        RSS
0117  00744 016377R       JSB DDOUT      OUTPUT END RECORD TO DISC
0118  00745 163315R       LDA ID6,I     CHECK PROGRAM TYKPE
0119  00746 010073        AND M177
0120  00747 050060        CPA ,5
0121  00750 026753R       JMP MAXWK      USER SEGMENT - SO CHECK FOR OVFL
0122  00751 063366R       LDA DSCNT
0123  00752 173316R       STA ID7,I     STORE SECTOR COUNT IN IDENT
0124*
0125*     CHECK IF RELOCATABLE BINARY EXCEEDS AVAILABLE WORK TRACK SPACE
0126*
0127  00753 062757R MAXWK LDA DTRTM      MAX + 1
0128  00754 053353R       CPA DSKAD      CURRENT
0129  00755 026330R       JMP DRCHA      ERROR-OUT OF WORK TRACKS
0130  00756 126715R       JMP DWRIT,I   RETURN
0131*
0132  00757 000000  DTRTM NOP
0133  00760 000000  LTEMP NOP
```

```
0135*
0136*  UPDATE LST, CHECK FOR UNDEFINED EXT &
0137*     LOAD LIBRARY ROUTINES IF NECESSARY
0138*
0139  00761 063343R LODLB LDA DBFLG
0140  00762 002003        SZA,RSS          ENTER DEBUF INTO LST
0141  00763 027010R       JMP NODBG        NO DEBUG OPTION
0142  00764 063344R       LDA DBFL2     HAS DEBUG BEEN ENTERED IN LST?
0143  00765 002002        SZA
0144  00766 027010R       JMP NODBG       YES- DO NOT RE-ENTER
0145  00767 016230R       JSB INLST
0146  00770 016234R       JSB LSTX
0147  00771 026773R       JMP *+2
0148  00772 026770R       JMP *-2
0149  00773 063461R       LDA CHRDE     SET -DEBUG-- NAME INTO LST AND ID
0150  00774 173277R       STA LST1,I
0151  00775 063462R       LDA CHRDE+1
0152  00776 173300R       STA LST2,I
0153  00777 063463R       LDA CHRDE+2
0154  01000 010075        AND M1774
0155  01001 173301R       STA LST3,I
0156  01002 002400        CLA              CLEAR BASE PAGE LINK ADDRESS
0157  01003 173302R       STA LST4,I
0158  01004 173303R       STA LST5,I
0159  01005 063275R       LDA TLST
0160  01006 073276R       STA PLST
0161  01007 073344R       STA DBFL2     SET FOR DEBUG ALREADY IN LST
0162  01010 002400  NODBG CLA
0163  01011 073370R       STA EXCNT
0164  01012 016230R LOADL JSB INLST
0165  01013 016234R       JSB LSTX
0166  01014 027061R       JMP LODLL
0167  01015 063475R       LDA AEXEC
0168  01016 153277R       CPA LST1,I
0169  01017 002001        RSS
0170  01020 027043R       JMP LODLX
0171  01021 063476R       LDA AEXEC+1
0172  01022 153300R       CPA LST2,I
0173  01023 002001        RSS
0174  01024 027043R       JMP LODLX
0175  01025 163301R       LDA LST3,I
0176  01026 010075        AND M1774
0177  01027 053477R       CPA AEXEC+2
0178  01030 002001        RSS
0179  01031 027043R       JMP LODLX
0180  01032 002400        CLA
0181  01033 173302R       STA LST4,I
0182  01034 063107R       LDA GOCHK        GET LINK FOR EXEC EXT
0183  01035 013443R       AND O1777
0184  01036 173303R       STA LST5,I
0185  01037 163301R       LDA LST3,I
0186  01040 010075        AND M1774
0187  01041 173301R       STA LST3,I
0188  01042 027013R       JMP LOADL+1
0189  01043 002400  LODLX CLA
0190  01044 173303R       STA LST5,I
```

```
0191  01045 163301R        LDA LST3,I
0192  01046 010075         AND M1774
0193  01047 173301R        STA LST3,I
0194  01050 163302R        LDA LST4,I
0195  01051 002020         SSA
0196  01052 027055R        JMP *+3
0197  01053 002002         SZA
0198  01054 027013R        JMP LOADL+1
0199  01055 037370R        ISZ EXCNT
0200  01056 003400         CCA
0201  01057 173302R        STA LST4,I
0202  01060 027013R        JMP LOADL+1
0203  01061 063370R LODLL  LDA EXCNT
0204  01062 002003         SZA,RSS
0205  01063 026226R        JMP LMAIN
0206  01064 016230R        JSB INLST      INIT, LST ENTRY
0207  01065 016234R        JSB LSTX       GET NEXT LST
0208  01066 026226R        JMP LMAIN      NO UNDEFINES: GO LOAD
0209  01067 163302R        LDA LST4,I     CHECK IF UNDEFINED EXT
0210  01070 050052         CPA N1
0211  01071 002001         RSS            YES: SEARCH LIBRARY
0212  01072 027065R        JMP *-5        TRY NEXT LST
0213  01073 002400         CLA
0214  01074 073370R        STA EXCNT
0215  01075 073366R        STA DSCNT
0216  01076 060055         LDA .2         SET FOR SYSTEM DISC
0217  01077 073351R        STA DISCX
0218  01100 017133R        JSB LIBS      LOAD REQUESTED LIBRARY ROUTINES
0219  01101 063370R        LDA EXCNT     GET # LIB ROUTINES LOADED
0220  01102 002002         SZA           NONE, SO DONE LOADING ROUTINES
0221  01103 027061R        JMP LODLL
0222  01104 016630R        JSB LSTEX     LIST UNDEFINED EXTERNALS
0223  01105 002001         RSS            UNDEFINED EXT FOUND
0224  01106 026226R        JMP LMAIN     NO UNDEFINED EXT FOUND
0225  01107 016001X GOCHK  JSB EXEC      SUSPEND LOADER
0226  01110 001112R        DEF *+2
0227  01111 000062         DEF .7
0228  01112 160001         LDA B,I        CHECK IF :GO,P,N
0229  01113 002002         SZA
0230  01114 027124R        JMP CFILE
0231  01115 006004         INB
0232  01116 160001         LDA B,I       CHECK IF N SPECIFIED
0233  01117 002003         SZA,RSS
0234  01120 026523R        JMP RCN60      GO INPUT FROM SECONDARY DEVICE
0235  01121 033542R        IOR  M300
0236  01122 073415R        STA PGMIN     SET INPUT LOGICAL UNIT
0237  01123 026523R        JMP RCN60      GO INPUT FROM SECONDARY DEVICE
0238  01124 050055  CFILE  CPA .2        CHECK IF MORE FILES TO BE INPUT
0239  01125 027131R        JMP CF10      YES
0240  01126 050054         CPA .1        CHECK IF TO IGNORE UNDEFINES
0241  01127 026226R        JMP LMAIN     YES
0242  01130 027107R        JMP GOCHK     GET :GO    INPUT
0243  01131 037372R CF10   ISZ FIOPT
0244  01132 026242R        JMP RCNTL
0245*
0246*     LIBS SEARCHES FORTRAN RELOCATABLE LIBRARY FOR REFERENCED
```

```
0247*  PROGRAMS NOT YET SATISFIED BY OTHER RELOCATABLE BINARY INPUTS.
0248*
0249   01133 000000  LIBS   NOP
0250   01134 063133R        LDA LIBS       SET RETURN ADDRESS FOR BLOCK
0251   01135 016017R        JSB SETUP        ROUTINE
0252*
0253   01136 003400         CCA
0254   01137 073376R        STA IGNOR
0255   01140 060325         LDA DSCL#      SET # OF
0256   01141 003004         CMA,INA          LIBRARY ROUTINES
0257   01142 073340R        STA #LIB
0258*
0259   01143 063445R        LDA M0760      SET MAX # LIBRARY SECTORS
0260   01144 073334R        STA COUNT        TO 760008
0261   01145 060324         LDA DSCLB      SET INITIAL LIBRARY TRACK/SECTOR
0262   01146 072104R        STA BLKAD        DISC ADDRESS
0263   01147 073543R        STA DSKNM      SET INITIAL NAM RECORD TR/SECT
0264*
0265   01150 016032R LIRD   JSB BLOCK      INPUT 1ST BLOCK OF RELOCATABLES
0266*
0267   01151 016107R LIB1   JSB FETCH      GET RECORD TYPE
0268   01152 050054         CPA .1         CHECK IF NAME RECORD
0269   01153 002001         RSS
0270   01154 027202R        JMP LBERR      INVALID LIBRARY RECORD
0271   01155 016230R        JSB INLST      CHECK IF UNDEFINES PRESENT
0272   01156 016234R        JSB LSTX
0273   01157 026100R        JMP BLCK6
0274   01160 163302R        LDA LST4,I     CHECK LST4 FOR -1
0275   01161 050052         CPA N1
0276   01162 002001         RSS            SKIP--MORE UNDEFINES PRESENT
0277   01163 027156R        JMP *-5        LST DEFINED--TRY NEXT LST
0278   01164 063376R        LDA IGNOR     CHECK IF LOADING
0279   01165 002002         SZA                YES
0280   01166 027170R        JMP LISKP     GO SKIP REST OF RECORD
0281   01167 017402R        JSB NAM        PROCESS NAM RECORD
0282   01170 016215R LISKP  JSB SKIP       SKIP REST OF RECORD
0283   01171 016107R        JSB FETCH      GET NEXT RECORD TYPE
0284   01172 050055  LINNM   CPA .2        ENT RECORD?
0285   01173 027211R        JMP LENTR      YES-SO PROCESS ENT RECORD
0286   01174 050056         CPA .3         DBL RECORD?
0287   01175 027205R        JMP LDBLR      YES-SO PROCESS DBL RECORD
0288   01176 050057         CPA .4         EXT RECORD?
0289   01177 027212R        JMP LEXTR      YES-SO PROCESS EXT RECORD
0290   01200 050060         CPA .5         END RECORD?
0291   01201 027316R        JMP LENDR      YES-SO PROCESS END RECORD
0292   01202 063204R LBERR  LDA ERR17
0293   01203 026630R        JMP ABRTX
0294*
0295   01204 030467  ERR17  ASC 1,17       BAD LIBRARY
0296*
0297   01205 063376R LDBLR  LDA IGNOR      LOADING?
0298   01206 002003         SZA,RSS
0299   01207 017544R        JSB DBL          YES - PROCESS DBL RECORD
0300   01210 027170R        JMP LISKP        NO - SKIP REST OF RECORD
0301*
0302   01211 003401  LENTR  CCA,RSS
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```
0303  01212 002400  LEXTR CLA
0304  01213 073407R       STA NXFLG      SET ENT/EXT FLAG
0305  01214 163337R       LDA CURAL,I    GET # ENTRIES IN ENT/EXT
0306  01215 010071        AND M37
0307  01216 003004        CMA,INA
0308  01217 073444R       STA TERMN      SET SYMBOL COUNT
0309  01220 063376R       LDA IGNOR      GET UTILITY PROGRAM LOADING FLAG
0310  01221 002003        SZA,RSS        NOT LOADING
0311  01222 027226R       JMP PRENX      PROCESS ENT/EXT RECORD
0312  01223 063407R       LDA NXFLG      GET ENT/EXT FLAG
0313  01224 002003        SZA,RSS        SKIP-ENT
0314  01225 027170R       JMP LISKP      IGNOR EXT RECORD
0315  01226 016203R PRENX JSB BUMP       INCREMENT TO
0316  01227 016203R       JSB BUMP         NAME ADDRESS
0317  01230 163337R NSYMB LDA CURAL,I    GET NAME
0318  01231 072210R       STA TBUF
0319  01232 016203R       JSB BUMP
0320  01233 163337R       LDA CURAL,I
0321  01234 072211R       STA TBUF+1
0322  01235 016203R       JSB BUMP
0323  01236 163337R       LDA CURAL,I
0324  01237 072212R       STA TBUF+2
0325  01240 016203R       JSB BUMP
0326  01241 017341R       JSB LSCAN      SCAN LST FOR NAME
0327  01242 027257R       JMP ENEX2           NAME NOT IN LST
0328  01243 063376R       LDA IGNOR      GET UTILITY LOADING FLAG
0329  01244 002002        SZA            LOADING
0330  01245 027306R       JMP SCANX      NOT LOADING
0331  01246 063407R       LDA NXFLG      GET ENT/EXT FLAG
0332  01247 002003        SZA,RSS        PROCESS ENT
0333  01250 027267R       JMP ENEX3      SET EXT ORDINAL
0334  01251 163302R       LDA LST4,I     GET ENT/EXT FOR LST ENTRY
0335  01252 002003        SZA,RSS        SKIP-UNDEFINED EXT
0336  01253 027271R       JMP EXNND      IGNORE UTILITY ENTRY POINT
0337  01254 063310R ENXX1 LDA ID1
0338  01255 173302R       STA LST4,I     SET LST4=LIBRARY ENT
0339  01256 027271R       JMP EXNND      TEST FOR END OF RECORD
0340  01257 063407R ENEX2 LDA NXFLG      GET ENT/EXT FLAG
0341  01260 002002        SZA
0342  01261 027277R       JMP ENEX4      PROCESS ENTRY POINT
0343  01262 017367R       JSB SELST      MAKE LST ENTRY
0344  01263 003400        CCA
0345  01264 173302R       STA LST4,I     SET LST4 TO UNDEF EXT
0346  01265 002400        CLA
0347  01266 173303R       STA LST5,I     CLEAR BP LINK ADDRESS WORD
0348  01267 062212R ENEX3 LDA TBUF+2
0349  01270 173301R       STA LST3,I     SET ORDINAL INTO LST
0350  01271 063407R EXNND LDA NXFLG      GET ENT/EXT FLAG
0351  01272 002002        SZA            EXT
0352  01273 016203R       JSB BUMP
0353  01274 037444R       ISZ TERMN      SKIP-ALL SYMBOLS PROCESSED
0354  01275 027230R       JMP NSYMB      PROCESS NEXT SYMBOL
0355  01276 027170R       JMP LISKP      GO TO NEXT RECORD
0356  01277 063376R ENEX4 LDA IGNOR      GET LOADING FLAG
0357  01300 002002        SZA            SKIP-LOADING
0358  01301 027271R       JMP EXNND      IGNORE-ENT NOT IN LIST
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0359  01302 017367R        JSB SELST      SET NAME INTO LST
0360  01303 002400         CLA
0361  01304 173303R        STA LST5,I     CLEAR BP LINK ADDRESS
0362  01305 027254R        JMP ENXX1      CONTINUE PROCESSING ENT POINT
0363  01306 163302R SCANX  LDA LST4,I     GET ENT/EXT ENTRY FLAG
0364  01307 002021         SSA,RSS        SKIP-UNDEFINED EXT
0365  01310 027271R        JMP EXNND      IGNORE DEFINED EXT
0366  01311 063543R        LDA DSKNM      RESTORE DISC ADDRESS TO START
0367  01312 072104R        STA BLKAD        OF NAM RECORD
0368  01313 002400         CLA
0369  01314 073376R        STA IGNOR
0370  01315 027150R        JMP LIRD     GO TO LOAD UTILITY PROGRAM
0371*
0372  01316 063376R LENDR  LDA IGNOR      GET LIBRARY LOADING FLAG
0373  01317 002002         SZA            SKIP-LOADING
0374  01320 027325R        JMP OMITE      SKIP OVER END RECORD
0375  01321 017757R        JSB UPNAM      UPDATE NAM RECORD IF NECESSARY
0376  01322 003400         CCA            SET UTIL LOADING FLAG = IGNOR
0377  01323 073376R        STA IGNOR
0378  01324 037370R        ISZ EXCNT      INCREMENT # UTIL PROG LOADED FLG
0379  01325 016215R OMITE  JSB SKIP       SKIP OVER END RECORD
0380  01326 016230R        JSB INLST      INITIALIZE LST
0381  01327 016234R CLORD  JSB LSTX       SET LST ADDRESSES
0382  01330 027335R        JMP END1       TEST FOR DONE
0383  01331 163301R        LDA LST3,I
0384  01332 010075         AND M1774
0385  01333 173301R        STA LST3,I
0386  01334 027327R        JMP CLORD      GO CLEAR NEXT
0387*
0388  01335 037340R END1   ISZ #LIB       PROCESSED ALL LIB ROUTINES?
0389  01336 027151R        JMP LIB1        NO- GET NEXT ONE
0390  01337 026100R        JMP BLCK6       YES- RTURN
0391*
0392  01340 000000  #LIB   NOP
0393*
0394*     LSCAN SEARCHES FOR AN ENTRY IN LST INDENTICAL
0395*  TO NAME IN TBUF.
0396*
0397*     RETURN:
0398*        (N+1)-END OF LST
0399*        (N+2)-NAME FOUND IN LST, CURRENT LST ADDRESSES
0400*              POINT TO THIS ENTRY
0401*
0402  01341 000000  LSCAN  NOP
0403  01342 016230R        JSB INLST      INITIALIZE LST
0404  01343 016234R ENTXX  JSB LSTX       SET LST ADDRESSES
0405  01344 127341R        JMP LSCAN,I    END OF LST RETURN
0406  01345 062210R        LDA TBUF       CHECK IF NAME 1,2 SAME?
0407  01346 153277R        CPA LST1,I
0408  01347 002001         RSS            YES
0409  01350 027343R        JMP ENTXX      NO-TRY NEXT ENTRY
0410  01351 062211R        LDA TBUF+1     CHECK IF NAME 3,4 SAME?
0411  01352 153300R        CPA LST2,I
0412  01353 002001         RSS            YES
0413  01354 027343R        JMP ENTXX      NO-TRY NEXT ENTRY
0414  01355 163301R        LDA LST3,I     CHECK IF NAME 5 SAME
```

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0415  01356 010075          AND  M1774
0416  01357 072213R         STA TBUF+3
0417  01360 062212R         LDA TBUF+2
0418  01361 010075          AND M1774
0419  01362 052213R         CPA TBUF+3
0420  01363 002001          RSS              YES
0421  01364 027343R         JMP ENTXX        NO-TRY NEXT ENTRY
0422  01365 037341R         ISZ LSCAN        INCR EXIT ADDRESS
0423  01366 127341R         JMP LSCAN,I      (N+2)RETURN
0424*
0425*      SELST SETS CURRENT NAME INTO LST
0426*
0427  01367 000000  SELST NOP
0428  01370 062210R         LDA TBUF         STORE NAME INTO LST
0429  01371 173277R         STA LST1,I
0430  01372 062211R         LDA TBUF+1
0431  01373 173300R         STA LST2,I
0432  01374 062212R         LDA TBUF+2
0433  01375 010075          AND M1774
0434  01376 173301R         STA LST3,I
0435  01377 063275R         LDA TLST
0436  01400 073276R         STA PLST         SET NEW END OF LST
0437  01401 127367R         JMP SELST,I      RETURN
```

```
0439*
0440* THIS ROUTINE PROCESSES RELOCATABLE NAM RECORDS.
0441*  IT IS ASSUMED THAT "FETCH" HAS BEEN CALLED AND
0442*  HAS RETURNED A RECORD TYPE 1. IN ADDITION, THE
0443*  BUFFER POINTER IS POINTING TO THE 2ND WORD IN
0444*  THE RECORD.
0445*
0446* THREE VARIABLES MUST HAVE PRE-FILLED VALUES:
0447*
0448*     DISCX - "2" FOR SYSTEM DISC
0449*             "3" FOR USER DISC
0450*
0451*     DSKNM - DISC ADDRESS OF NAM RECORD
0452*
0453*     RLGTH - RECORD LENGTH (FROM FETCH ROUTINE)
0454*
0455* FUNCTIONS:
0456*
0457*    1. CHECKS TO SEE IF NAME IS ALREADY IN IDENT
0458*       TABLE
0459*
0460*          A. IF SO, ABORTS WITH ERROR 13.
0461*
0462*          B. IF NOT, CREATES AN IDENT ENTRY AS FOLLOWS:
0463*
0464*               ID1 - CHARACTERS 1&2 OF NAME
0465*               ID2 - CHARACTERS 3&4 OF NAME
0466*               ID3 - CHARACTER  5   OF NAME
0467*               ID4 - COMMON LENGTH (BIT 15 SET IF
0468*                       FROM USER DISC)
0469*               ID5 - DISC ADDRESS
0470*               ID6 - PROGRAM TYPE
0471*               ID7 - ZERO
0472*
0473*    2. CHECKS TO SEE IF PROGRAM HAS ANY BASE PAGE
0474*       ALLOCATED
0475*
0476*          A. IF SO, ABORTS WITH ERROR 14.
0477*
0478*          B. IF NOT, RETURNS NORMALLY.
0479*
0480  01402 000000  NAM   NOP
0481*
0482* GET INFORMATION FROM NAM RECORD
0483*
0484  01403 016203R       JSB BUMP
0485  01404 016203R       JSB BUMP
0486  01405 163337R       LDA CURAL,I   NAME.
0487  01406 073534R       STA NAM12       CHARACTERS 1&2
0488  01407 016203R       JSB BUMP
0489  01410 163337R       LDA CURAL,I   NAME.
0490  01411 073535R       STA NAM34       CHARACTERS 3&4
0491  01412 016203R       JSB BUMP
0492  01413 163337R       LDA CURAL,I   NAME-
0493  01414 010075        AND M1774
0494  01415 073536R       STA NAM5        CHARACTER  5
```

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0495  01416 016203R        JSB BUMP
0496  01417 163337R        LDA CURAL,I
0497  01420 073537R        STA NPL        PROGRAM LENGTH
0498  01421 016203R        JSB BUMP
0499  01422 163337R        LDA CURAL,I
0500  01423 073540R        STA NBPL       BASE PAGE LENGTH
0501  01424 016203R        JSB BUMP
0502  01425 163337R        LDA CURAL,I
0503  01426 073541R        STA NCL        COMMON LENGTH
0504  01427 016203R        JSB BUMP
0505  01430 163337R        LDA CURAL,I
0506  01431 073542R        STA NTYPE      PROGRAM TYPE
0507*
0508* SEARCH FOR DUPLICATE IDENT ENTRY
0509*
0510  01432 016261R        JSB INIDX
0511  01433 016265R NXTID  JSB IDX
0512  01434 027464R        JMP NTFND
0513*
0514  01435 063376R        LDA IGNOR      IGNORE CHECK OF DUPLICATE
0515  01436 002003         SZA,RSS         NAMES IF LOADING FROM
0516  01437 027433R        JMP NXTID        LIBRARY
0517*
0518  01440 063534R        LDA NAM12
0519  01441 153310R        CPA ID1,I
0520  01442 002001         RSS
0521  01443 027433R        JMP NXTID
0522  01444 063535R        LDA NAM34
0523  01445 153311R        CPA ID2,I
0524  01446 002001         RSS
0525  01447 027433R        JMP NXTID
0526  01450 067536R        LDB NAM5
0527  01451 163312R        LDA ID3,I
0528  01452 010075         AND M1774
0529  01453 050001         CPA B
0530  01454 002001         RSS
0531  01455 027433R        JMP NXTID
0532*
0533  01456 063502R        LDA ERR13      DUPLICATE PROGRAM NAME
0534  01457 016344R        JSB ERROR
0535  01460 060060         LDA .5
0536  01461 067310R        LDB ID1
0537  01462 016331R        JSB SYOUT
0538  01463 026631R        JMP ABORT      =ERROR ABORT
0539*
0540* CREATE IDENT ENTRY
0541*
0542  01464 063534R NTFND  LDA NAM12      INSERT PROGRAM NAME
0543  01465 173310R        STA ID1,I
0544  01466 063535R        LDA NAM34
0545  01467 173311R        STA ID2,I
0546  01470 063536R        LDA NAM5
0547  01471 173312R        STA ID3,I
0548*
0549  01472 002400         CLA            INSERT COMMON LENGTH
0550  01473 067351R        LDB DISCX
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0551   01474 004010          SLB
0552   01475 063447R         LDA MSIGN      (BIT 15 SET IF FROM USER DISC)
0553   01476 043541R         ADA NCL
0554   01477 173313R         STA ID4,I
0555*
0556   01500 063543R         LDA DSKNM      DISC ADDRESS OF
0557   01501 173314R         STA ID5,I        NAM RECORD
0558   01502 067537R         LDB NPL
0559   01503 006021          SSB,RSS        SAVE, IF PROGRAM WAS COMPILED
0560   01504 002400          CLA
0561   01505 073411R         STA LWH1
0562*
0563   01506 063542R         LDA NTYPE      GET PROGRAM TYPE FROM NAM RECORD
0564   01507 010073          AND M177
0565   01510 067431R         LDB RLGTH       IF BCS RECORD (NAM LENGTH = 9),
0566   01511 054042          CPB N9            FORCE PROGRAM TYPE 3
0567   01512 060056          LDA .3
0568   01513 002003          SZA,RSS         IF PROGRAM TYPE = 0,
0569   01514 060056          LDA .3            FORCE PROGRAM TYPE 3
0570   01515 067537R         LDB NPL
0571   01516 047541R         ADB NCL
0572   01517 006003          SZB,RSS         IF TOTAL PROGRAM LENGTH = 0,
0573   01520 060061          LDA .6            FORCE PROGRAM TYPE 6
0574   01521 173315R         STA ID6,I      SET NEW PROGRAM TYPE IN IDENT
0575*
0576   01522 002400          CLA
0577   01523 173316R         STA ID7,I
0578   01524 073425R         STA MAXC       INITIALIZE MAX RELOC FOR DBL
0579*
0580   01525 063305R         LDA TIDNT      INCREMENT IDENT TABLE POINTER
0581   01526 073306R         STA PIDNT
0582*
0583   01527 067540R         LDB NBPL       ANY BASE PAGE ALLOCATED?
0584   01530 006003          SZB,RSS
0585   01531 127402R         JMP NAM,I       NO= RETURN
0586   01532 063503R         LDA ERR14       YES= NOT ALLOWED, ERROR 14 &
0587   01533 026630R         JMP ABRTX            ABORT
0588*
0589   01534 000000  NAM12    NOP
0590   01535 000000  NAM34    NOP
0591   01536 000000  NAM5     NOP
0592   01537 000000  NPL      NOP
0593   01540 000000  NBPL     NOP
0594   01541 000000  NCL      NOP
0595   01542 000000  NTYPE    NOP
0596   01543 000000  DSKNM    NOP
```

```
0598*
0599* THIS ROUTINE PROCESSES RELOCATABLE DBL RECORDS.
0600* IT IS ASSUMED THAT "FETCH" HAS BEEN CALLED AND
0601*  HAS RETURNED A RECORD TYPE 3, IN ADDITION, THE
0602*  BUFFER POINTER IS POINTING TO THE 2ND WORD IN
0603*  THE RECORD.
0604*
0605* ONE VARIABLE MUST HAVE A PRE-FILLED VALUE:
0606*
0607*     MAXC  -  MAX RELOCATION ADDRESS IS INITIALLY
0608*                SET TO ZERO IN THE NAM RECORD
0609*                PROCESSOR
0610*
0611* FUNCTION:
0612*
0613*    TO COMPUTE THE LENGTH OF THE CURRENT PROGRAM.
0614*     THIS VALUE IS STORED IN "LWH2" & USED TO
0615*     UPDATE THE NAM RECORD IF THE PROGRAM BEING
0616*     LOADED WAS COMPILED.
0617*
0618  01544 000000  DBL   NOP
0619*
0620  01545 163337R       LDA CURAL,I   SAVE LENGTH OF CURRENT RECORD
0621  01546 010072        AND M77
0622  01547 073407R       STA TEMP1
0623*
0624  01550 016203R       JSB BUMP
0625  01551 016203R       JSB BUMP
0626  01552 167337R       LDB CURAL,I   GET CURRENT RELOCATION ADDRESS
0627  01553 063425R       LDA MAXC      IS IT GREATER THAN CURRENT MAX
0628  01554 003004        CMA,INA         RELOCATION ADDRESS?
0629  01555 040001        ADA B
0630  01556 002020        SSA
0631  01557 127544R       JMP DBL,I       NO- SKIP IT
0632*
0633  01560 063407R       LDA TEMP1       YES- COMPUTE NEW PROGRAM
0634  01561 040001        ADA B                LENGTH
0635  01562 073412R       STA LWH2
0636  01563 077425R       STB MAXC             SET NEW MAX RELOC ADDR
0637  01564 127544R       JMP DBL,I
```

```
0639*
0640* THIS ROUTINE PROCESSES RELOCATABLE ENT & EXT
0641*  RECORDS. IT IS ASSUMED THAT "FETCH" HAS BEEN
0642*  CALLED AND HAS RETURNED RECORD TYPE 2 OR 4. IN
0643*  ADDITION, THE BUFFER POINTER IS POINTING TO THE
0644*  SECOND WORD IN THE BUFFER.
0645*
0646* PRE-FILLED VALUES:
0647*
0648*     "A" REGISTER = 0  IF EXT RECORD
0649*                  =1  IF ENT RECORD
0650*
0651* FUNCTIONS:
0652*
0653*    1. CHECKS TO SEE IF ENT/EXT NAMES ARE IN LST
0654*
0655*          A. YES:   ENT: IF LST4>0, ERROR 7 (DUP ENT)
0656*                         IF LST4=0, SET LST4 TO ID1
0657*                         IF LST4<0, ERROR 15 (SEG
0658*                              BEFORE MAIN) IF MAIN;
0659*                              OTHERWISE SET LST4 TO
0660*                              ID1
0661*                    EXT: IF MAIN, CONTINUE PROCESS
0662*                         IF SEGMENT & LST4<=0, CONT.
0663*                         IF SEGMENT & LST4>0,FIND ID
0664*                          ENTRY OF ENT NAME. IF MAIN
0665*                          SET ID1 TO ID1 OF DEFINING
0666*                          PROGRAM.
0667*
0668*          B. NO:    ENT: PUT IN LST, SET LST4 TO ID1
0669*
0670*                    EXT: PUT IN LST, SET LST4 TO 0
0671*                          IF NOT SEGMENT; TO COMPLE-
0672*                          MENT OF ID1 IF SEGMENT
0673*
0674  01565 000000  ENT,XT NOP
0675  01566 073407R        STA NXFLG      SAVE ENT/EXT FLAG
0676*
0677  01567 163337R        LDA CURAL,I    SET COUNTER TO - # NAMES
0678  01570 010071         AND M37          IN RECORD
0679  01571 003004         CMA,INA
0680  01572 073370R        STA EXCNT
0681*
0682  01573 016203R        JSB BUMP       BUMP BUFFER POINTER TO START OF
0683  01574 016203R        JSB BUMP         SYMBOL NAME
0684*
0685  01575 163337R SAVNM  LDA CURAL,I    SAVE SYMBOL NAME IN TBUF
0686  01576 072210R        STA TBUF
0687  01577 016203R        JSB BUMP
0688  01600 163337R        LDA CURAL,I
0689  01601 072211R        STA TBUF+1
0690  01602 016203R        JSB BUMP
0691  01603 163337R        LDA CURAL,I
0692  01604 010075         AND M1774
0693  01605 072212R        STA TBUF+2
0694  01606 016203R        JSB BUMP       POSITION POINTER TO NEXT NAME
```

```
0695*
0696  01607 016230R        JSB INLST      SEARCH LST FOR NAME
0697  01610 016234R NEXT   JSB LSTX
0698  01611 027657R        JMP NOENT      - NOT FOUND
0699  01612 062210R        LDA TBUF
0700  01613 153277R        CPA LST1,I
0701  01614 002001         RSS
0702  01615 027610R        JMP NEXT
0703  01616 062211R        LDA TBUF+1
0704  01617 153300R        CPA LST2,I
0705  01620 002001         RSS
0706  01621 027610R        JMP NEXT
0707  01622 163301R        LDA LST3,I
0708  01623 010075         AND M1774
0709  01624 052212R        CPA TBUF+2
0710  01625 002001         RSS
0711  01626 027610R        JMP NEXT
0712*
0713* NAME FOUND IN LST
0714*
0715  01627 063407R        LDA NXFLG      ENT OR EXT?
0716  01630 002003         SZA,RSS
0717  01631 027703R        JMP EXT1         EXT PROCESSING
0718*
0719  01632 163302R        LDA LST4,I     ID ADDRESS ALREADY ASSIGNED?
0720  01633 002003         SZA,RSS
0001  01634 027654R        JMP SIDA         NO- SET ID ADDRESS
0002  01635 002021         SSA,RSS
0003  01636 027646R        JMP DUP          YES- DUP ENTRY POINT ERROR
0004  01637 163315R        LDA ID6,I
0005  01640 010073         AND M177
0006  01641 050056         CPA .3
0007  01642 002001         RSS
0008  01643 027654R        JMP SIDA
0009*
0010  01644 063504R        LDA ERR15
0011  01645 026630R        JMP ABRTX
0012*
0013  01646 063474R DUP    LDA ERR07      DUPLICATE ENTRY POINT ERROR
0014  01647 016344R        JSB ERROR
0015  01650 060060         LDA .5          OUTPUT NAME, THEN ABORT
0016  01651 067277R        LDB LST1
0017  01652 016331R        JSB SYOUT
0018  01653 026631R        JMP ABORT
0019*
0020  01654 063310R SIDA   LDA ID1        SET ADDRESS OF ID ENTRY INTO
0021  01655 173302R        STA LST4,I       LST4
0022  01656 027741R        JMP ENXT1
0023*
0024* NAME NOT FOUND IN LST
0025*
0026  01657 062210R NOENT  LDA TBUF       PUT SYMBOL NAME IN LST
0027  01660 173277R        STA LST1,I
0028  01661 062211R        LDA TBUF+1
0029  01662 173300R        STA LST2,I
0030  01663 062212R        LDA TBUF+2
```

```
0031  01664 173301R        STA LST3,I
0032  01665 002400         CLA              CLEAR BP LINK IN LST
0033  01666 173303R        STA LST5,I
0034  01667 063275R        LDA TLST         INCREMENT LST POINTER
0035  01670 073276R        STA PLST
0036*
0037  01671 063407R        LDA NXFLG        SET LST4 ACCORDING TO RECORD
0038  01672 002002         SZA               TYPE:
0039  01673 027654R        JMP SIDA           IF ENT, LST4 = ID1
0040  01674 163315R        LDA ID6,I          IF EXT, LST4 = -ID1 IF SEGMENT
0041  01675 010073         AND M177                       =  0    IF MAIN
0042  01676 067310R        LDB ID1
0043  01677 050060         CPA .5
0044  01700 007001         CMB,RSS
0045  01701 006400         CLB
0046  01702 177302R        STB LST4,I
0047*
0048  01703 163315R EXT1   LDA ID6,I        FURTHER PROCESSING NECESSARY IF
0049  01704 010073         AND M177          PROGRAM CONTAINING EXT IS A
0050  01705 050060         CPA .5           SEGMENT
0051  01706 002001         RSS
0052  01707 027741R        JMP ENXT1         OTHERWISE, ON TO THE NEXT
0053*
0054  01710 063310R        LDA ID1          SAVE ID ADDRESS OF SEGMENT
0055  01711 073377R        STA IMAIN
0056*
0057  01712 163302R        LDA LST4,I       HAS ERRORESPONDING ENTRY BEEN
0058  01713 002002         SZA               DEFINED?
0059  01714 002020         SSA
0060  01715 027741R        JMP ENXT1          NO- SKIP
0061  01716 073305R        STA TIDNT          YES- SET TO GET ID'S FOR PROG
0062  01717 016265R        JSB IDX             DEFINING ENT
0063  01720 026637R        JMP RCERR           (SHOULD FIND IT)
0064  01721 163315R        LDA ID6,I        IS PROGRAM CONTAINING ENTRY POIN
0065  01722 002021         SSA,RSS           A SUBROUTINE?
0066  01723 027727R        JMP NTMN           YES- SET FOR NOT MAIN
0067  01724 010073         AND M177           NO - IS IT A MAIN?
0068  01725 050056         CPA .3
0069  01726 007401         CCB,RSS               YES, TEMP=-1 FOR MAIN
0070  01727 006400  NTMN   CLB
0071  01730 077443R        STB TEMP
0072*
0073  01731 063377R        LDA IMAIN        RESTORE IDENT ENTRY OF PROGRAM
0074  01732 073305R        STA TIDNT         CONTAINING EXT.
0075*
0076  01733 016265R        JSB IDX
0077  01734 026637R        JMP RCERR
0078*
0079  01735 037443R        ISZ TEMP         WAS PROGRAM CONTAINING ENT A MAI
0080  01736 027741R        JMP ENXT1          NO- GET NEXT SYMBOL
0081  01737 163302R        LDA LST4,I         YES- SET ID ADDRESS OF MAIN
0082  01740 173316R        STA ID7,I           INTO ID7 OF SEGMENT
0083*
0084  01741 063407R ENXT1  LDA NXFLG        IF ENT, BUMP POINTER PAST
0085  01742 002002         SZA               RELOCATABLE ADDRESS
0086  01743 016203R        JSB BUMP
```

```
0087   01744 037370R          ISZ EXCNT       DONE WITH ALL SYMBOLS IN RECORD?
0088   01745 027575R          JMP SAVNM        NO- PROCESS NEXT NAME
0089   01746 127565R          JMP EN.XT,I      YES- RETURN
```

```
0091*
0092* THIS ROUTINE PROCESSES RELOCATABLE END RECORDS.
0093*  IT IS ASSUMED THAT "FETCH" HAS BEEN CALLED AND
0094*  HAS RETURNED A RECORD TYPE OF 5. IN ADDITION,
0095*  THE BUFFER POINTER IS POINTING TO THE 2ND WORD
0096*  IN THE RECORD.
0097*
0098* TWO VARIABLES MUST HAVE PREFILLED VALUES:
0099*
0100*     LWH1 - "0" IF PROGRAM NOT COMPILED
0101*            "DISC ADDR OF NAM RECORD" IF PROGRAM
0102*                WAS COMPILED
0103*            (SET BY NAM RECORD PROCESSOR)
0104*
0105*     LWH2 - PROGRAM LENGTH
0106*            (SET BY DBL RECORD PROCESSOR)
0107*
0108* FUNCTIONS:
0109*
0110*     1. TO SET BIT 15 OF ID6 FOR THIS PROGRAM
0111*
0112*          "0" - PROGRAM IS A SUBROUTINE (NO LABEL
0113*                ON END STATEMENT)
0114*
0115*          "1" - PROGRAM IS A MAIN/SEGMENT (LABEL
0116*                ON END STATEMENT)
0117*
0118*     2. TO SET THE COMPUTED RECORD LENGTH INTO THE
0119*          NAM RECORD IF THE PROGRAM WAS COMPILED.
0120*          (THIS IS NECESSARY FOR CURRENT PAGE LINK
0121*          PROCESSING.)
0122*
0123  01747 000000  END   NOP
0124*
0125  01750 002404        CLA,INA         SET BIT 15 OF ID6 IF PROGRAM
0126  01751 113337R       AND CURAL,I       HAD A LABEL ON THE END
0127  01752 001300        RAR               STATEMENT (IE. WAS A MAIN OR
0128  01753 133315R       IOR ID6,I         A SEGMENT)
0129  01754 173315R       STA ID6,I
0130  01755 017757R       JSB UPNAM       UPDATE NAM RECORD IF NECESSARY
0131*
0132  01756 127747R       JMP END,I
0133*
0134* UPDATE NAM RECORD - PROG LENGTH & CHECKSUM
0135*
0136  01757 000000  UPNAM NOP
0137  01760 063411R       LDA LWH1        WAS PROGRAM COMPILED?
0138  01761 002003        SZA,RSS
0139  01762 127757R       JMP UPNAM,I       NO-RETURN
0140*
0141  01763 066515R       LDB #WRDS       SAVE CURRENT # WORDS FOR
0142  01764 077407R       STB TEMP1        DISC TARNSFER
0143  01765 067547R       LDB .128        SET TO INPUT 1 SECTOR
0144  01766 076515R       STB #WRDS
0145*
0146  01767 067550R       LDB ADBUF       INPUT NAM RECORD INTO DBUF
```

```
0147   01770 016465R        JSB DISKI
0148   01771 063412R        LDA LWH2              SET IN COMPUTED PROGRAM
0149   01772 073614R        STA DBUF+6          LENGTH
0150   01773 063606R        LDA DBUF          COMPUTE NEW CHECKSUM
0151   01774 001727         ALF,ALF
0152   01775 010073         AND M177
0153   01776 003004         CMA,INA
0154   01777 040056         ADA .3
0155   02000 073453R        STA WDCNT
0156   02001 063607R        LDA DBUF+1
0157   02002 067550R        LDB ADBUF
0158   02003 044056         ADB .3
0159   02004 140001         ADA B,I
0160   02005 006004         INB
0161   02006 037453R        ISZ WDCNT
0162   02007 026004R        JMP *+3
0163   02010 073610R        STA DBUF+2
0164*
0165   02011 063411R        LDA LWH1              OUTPUT UPDATED NAM RECORD
0166   02012 067550R        LDB ADBUF           BACK TO DISC
0167   02013 016473R        JSB DISKO
0168*
0169   02014 063407R        LDA TEMP1         RESTOR # WORDS
0170   02015 072515R        STA #WRDS           FOR DISC TRANSFER
0171*
0172   02016 127757R        JMP UPNAM,I
```

```
0174*
0175* SETUP -  SETS UP THE RETURN ADDRESS FOR BLOCK
0176*           ROUTINE WHEN ALL SECTORS HAVE BEEN INPUT
0177*          SETS UP THE BLOCK SIZE (BOTH # SECTORS &
0178*           # WRODS) FOR DISC INPUT, ACCORDING TO
0179*           TDIR.
0180*
0181*    DEPENDENT VARIABLES:
0182*
0183*          "A" REGISTER = RETURN ADDRESS WHEN ALL
0184*                         SECTORS HAVE BEEN INPUT
0185*
0186*           TDIR        = IF JBIN (=1), BLOCK IS 1
0187*                       = IF NOT JBIN (=0), BLOCK
0188*                            IS 4 SECTORS
0189*
0190  02017 000000  SETUP NOP
0191  02020 072103R       STA RTRN      SET RETURN FOLLOWING COMPLETION
0192*
0193  02021 002404        CLA,INA       IF INPUT IS FROM JOB BINARY AREA
0194  02022 067442R       LDB TDIR        BLOCK SIZE IS 1 SECTOR.
0195  02023 006003        SZB,RSS       OTHERWISE, BLOCK SIZE IS 4
0196  02024 040056        ADA .3          SECTORS.
0197  02025 072105R       STA BLCK#
0198  02026 016003X       MPY .128      ALTER # WORDS PER DISC INPUT
0199  02030 072515R       STA #WRDS
0200*
0201  02031 126017R       JMP SETUP,I



0203*
0204* BLOCK -  INPUTS A BLOCK OF RELOCATABLE RECORDS
0205*           FROM THE DISC INTO CORE AT "LBUF", THE
0206*           SIZE OF THE BLOCK IS DETERMINED BY
0207*           "SETUP". IF THE ENTIRE BLOCK CANNOT BE
0208*           INPUT, AS MUCH AS POSSIBLE IS. IF NONE
0209*           IS POSSIBLE, RETURN IS MADE THROUGH
0210*           "RTRN" (SET BY "SETUP"), AFTER RESTORING
0211*           THE NORMAL DISC INPUT TRANSFER TO 1
0212*           SECTOR (128 WORDS).
0213*          FOLLOWING EACH TRANSFER, THE BUFFER
0214*           POINTER & LENGTH ("CURAL" & "LCNT") ARE
0215*           INITIALIZED; # SECTORS REMAINING IS
0216*           DECREMENTED; DISC ADDRESS & # SECTORS
0217*           INPUT ARE INCREMENTED.
0218*
0219*    DEPENDENT VARIABLES:
0220*
0221*          RTRN = RETURN ADDRESS FOLLOWING COMPLETION
0222*                 (SET BY SETUP)
0223*
0224*          DISCX= "2" FOR SYSTEM DISC
0225*                 "3" FOR USER DISC
0226*
0227*          TDIR = "0" FOR NON-JBIN FILES
```

```
0228*                  "1" FOR JBIN FILES (BACKWARD INCR)
0229*
0230*          COUNT= # SECTORS TO BE INPUT
0231*
0232*          BLCK#= BLOCK SIZE OF INPUT TRANSFER
0233*
0234*          BCKAD= STARTING DISC ADDRESS
0235*
0236  02032 000000  BLOCK NOP
0237*
0238  02033 062104R         LDA BLKAD      SAVE CURRENT BLOCK
0239  02034 072106R         STA CBLA        STARTING ADDRESS
0240*
0241  02035 066105R         LDB BLCK#      CAN INPUT DESIRED BLOCK SIZE?
0242  02036 007004          CMB,INB
0243  02037 047334R         ADB COUNT
0244  02040 006020          SSB
0245  02041 026067R         JMP BLCK1       NO= SEE IF ANY INPUT POSSIBLE
0246*
0247  02042 077334R BLCK2   STB COUNT      UPDATE # SECTORS LEFT TO INPUT
0248  02043 062104R         LDA BLKAD
0249  02044 067552R         LDB ALBUF      INPUT BLOCK FROM DISC ADDR IN
0250  02045 016465R         JSB DISKI      BLKAD INTO LBUF
0251*
0252  02046 063552R         LDA ALBUF      INITIALIZE BUFFER POINTER
0253  02047 073337R         STA CURAL
0254  02050 062105R         LDA BLCK#      INITIALIZE BUFFER LENGTH
0255  02051 016003X         MPY .128         ( = # WORDS)
0256  02053 003004          CMA,INA
0257  02054 073402R         STA LCNT
0258*
0259  02055 062105R         LDA BLCK#
0260  02056 003004          CMA,INA
0261  02057 073443R         STA TEMP
0262  02060 037366R BLCK5   ISZ DSCNT      INCREMENT # SECTORS INPUT
0263  02061 062104R         LDA BLKAD      INCREMENT DISC ADDRESS
0264  02062 017442R         JSB NDA
0265  02063 072104R BLCK3   STA BLKAD
0266  02064 037443R         ISZ TEMP
0267  02065 026060R         JMP BLCK5
0268  02066 126032R         JMP BLOCK,I
0269*
0270  02067 063334R BLCK1   LDA COUNT      ANY MORE SECTORS TO INPUT?
0271  02070 002003          SZA,RSS
0272  02071 026100R         JMP BLCK6        NO= RETURN
0273  02072 072105R         STA BLCK#        YES= SET BLCK# TO # SECTORS
0274  02073 016003X         MPY .128
0275  02075 072515R         STA #WRDS
0276  02076 006400          CLB                   LEFT; SET # SECTORS LEFT
0277  02077 026042R         JMP BLCK2             TO ZERO.
0278*
0279  02100 063547R BLCK6   LDA .128       RESTORE # WORDS PER DISC INPUT
0280  02101 072515R         STA #WRDS        TRANSFER TO 128
0281  02102 126103R         JMP RTRN,I     RETURN
0282*
0283  02103 000000  RTRN    NOP            RETURN ADDRESS
```

```
0284  02104 000000  BLKAD NOP          STARTING DISC ADDRESS
0285  02105 000000  BLCK# NOP          BLOCK SIZE
0286  02106 000000  CBLA  NOP          CURRENT BLCK DISC ADDRESS
```

```
0288*
0289* NOTE:   FETCH, BUMP, & SKIP  ROUTINES ARE ALSO
0290*         USED WHEN PROCESSING RELOCATABLE INPUT
0291*         FROM PERIPHERAL DEVICES. IN THESE CASES,
0292*         IT IS ASSUMED THAT NO RECORD LENGTH WILL
0293*         EXCEED 128 WORDS.




0295*
0296* FETCH -  SETS UP THE RECORD LENGTH OF THE CURRENT
0297*            RELOCATABLE RECORD (RLGTH & SCNT)
0298*          VERIFIES RECORD VALIDITY:
0299*            IF ILLEGAL LENGTH OR TYPE = ERROR 2
0300*
0301*          NOTE: IF A ZERO RECORD LENGTH IS EN-
0302*           COUNTERED, THE RECORD IS ASSUMED TO
0303*           CONTAIN THE ZEROES FOLLOWING THE END
0304*           RECORD. THE REST OF THE SECTOR IS
0305*           SKIPPED
0306*
0307*    DEPENDENT VARIABLES:
0308*
0309*         CURAL - ASSUMED TO BE POINTING TO 1ST
0310*                  WORD IN RELOCATABLE RECORD ON
0311*                  ENTRY. ON EXIT, IT IS POINTING
0312*                  TO THE 2ND WORD.
0313*
0314  02107 000000  FETCH NOP
0315*
0316  02110 163337R       LDA CURAL,I
0317  02111 002020        SSA
0318  02112 026637R       JMP RCERR      ILLEGAL RECORD LENGTH
0319  02113 001727        ALF,ALF
0320  02114 010073        AND M177
0321  02115 003004        CMA,INA
0322  02116 073431R       STA RLGTH      SET VALID RECORD LENGTH
0323*
0324  02117 002003        SZA,RSS        RECORD LENGTH=0?
0325  02120 026171R       JMP NEWS        YES- GET NEXT SECTOR
0326  02121 072202R       STA SCNT        NO- SET RECORD LENGTH FOR SKIP
0327*
0328  02122 040056        ADA .3         VALID RECORD LENGTH IS
0329  02123 002021        SSA,RSS       4 - 60
0330  02124 026637R       JMP RCERR
0331  02125 073453R       STA WDCNT
0332  02126 043545R       ADA D57
0333  02127 002020        SSA
0334  02130 026637R       JMP RCERR
0335*
0336  02131 016203R       JSB BUMP       BUMP POINTER TO 2ND WORD
0337*
0338  02132 163337R CHKOK LDA CURAL,I    GET RECORD TYPE
0339  02133 001723        ALF,RAR         VALID IF 1-5
0340  02134 010062        AND .7
```

```
0341  02135 070001          STA B
0342  02136 002002          SZA
0343  02137 044045          ADB N6
0344  02140 006021          SSB,RSS
0345  02141 026637R         JMP RCERR        NOT VALID - ERROR 2
0346*
0347  02142 050054          CPA ,1          NAM RECORD?
0348  02143 002001          RSS               YES- UPDATE DISC ADDR
0349  02144 126107R         JMP FETCH,I         CONTAINS RECORD TYPE
0350*
0351  02145 007400          CCB             COMPUTE NEW DISC ADDRESS
0352  02146 063402R         LDA LCNT         FOR NAM RECORD
0353  02147 040052          ADA N1
0354  02150 016002X         DIV N128
0355  02152 066105R         LDB BLCK#
0356  02153 007004          CMB,INB
0357  02154 040001          ADA B
0358  02155 002021          SSA,RSS
0359  02156 026167R         JMP NEW2
0360  02157 073441R         STA TCNT
0361*
0362  02160 062106R         LDA CBLA
0363  02161 017442R         JSB NDA
0364  02162 037441R         ISZ TCNT
0365  02163 026161R         JMP *-2
0366  02164 073543R NEW1    STA DSKNM
0367  02165 002404          CLA,INA         "A" = NAM RECORD TYPE
0368  02166 126107R         JMP FETCH,I
0369*
0370  02167 062106R NEW2    LDA CBLA
0371  02170 026164R         JMP NEW1
0372*
0373  02171 007400  NEWS    CCB             POSITION POINTERS TO
0374  02172 063402R         LDA LCNT         BEGINNING OF NEXT
0375  02173 016002X         DIV ,128         SECTOR
0376  02175 006003          SZB,RSS
0377  02176 067546R         LDB N128
0378  02177 076202R         STB SCNT
0379  02200 016215R         JSB SKIP
0380  02201 026110R         JMP FETCH+1     REPROCESS NAM RECORD
0381  02202 000000  SCNT    NOP



0383*
0384* BUMP -  INCREMENTS BUFFER ADDRESS POINTER,    &
0385*         DECREMENTS # WORDS WITHIN RELOCATABLE
0386*           RECORD,
0387*         DECREMENTS # WRODS IN BUFFER
0388*         WHEN ALL WORDS HAVE BEEN PROCESSED, "BLOCK"
0389*           IS CALLED TO READ IN NEXT BLOCK OF
0390*           SECTORS
0391*
0392*    DEPENDENT VARIABLES:
0393*
0394*         CURAL - CURRENT BUFFER ADDRESS POINTER
```

```
0395*
0396*          LCNT  = # WORDS REMAINING IN BUFFER
0397*
0398*          SCNT  = # WORDS REMAINING IN RECORD
0399*
0400   02203 000000  BUMP  NOP
0401*
0402   02204 037337R        ISZ CURAL      INCREMENT ADDR POINTER
0403   02205 036610R        ISZ W,PRG      ICREMENT # WORDS IN PROGRAM
0404   02206 000000         NOP             (IGNORE ZERO)
0405   02207 036202R        ISZ SCNT       INCREMENT # WORDS IN RECORD
0406   02210 000000         NOP             (IGNORE ZERO)
0407   02211 037402R        ISZ LCNT       INCREMENT # WORDS IN BUFFER
0408   02212 126203R        JMP BUMP,I       NEW BLOCK NOT NEEDED
0409*
0410   02213 016032R        JSB BLOCK        INPUT NEW BLOCK
0411   02214 126203R        JMP BUMP,I



0413*
0414* SKIP =  SKIPS TO THE BEGINNING OF THE NEXT
0415*          RELOCATABLE RECORD IN THE INPUT BUFFER
0416*          (DOES NOT SKIP IF ALREADY POSITIONED TO
0417*          BEGINNING OF RECORD = IE SCNT=0)
0418*
0419*    DEPENDENT VARIABLES:
0420*
0421*          SCNT  = # WORDS REMAINING IN RECORD
0422*                    (SET BY "FETCH", UPDATED BY "BUMP")
0423*
0424   02215 000000  SKIP  NOP
0425*
0426   02216 062202R        LDA SCNT       ALREADY AT BEGINNING OF RECORD?
0427   02217 002021         SSA,RSS
0428   02220 126215R        JMP SKIP,I       YES= RETURN
0429*
0430   02221 073441R        STA TCNT         NO = BUMP POINTERS PAST END
0431   02222 016203R        JSB BUMP              OF CURRENT RECORD
0432   02223 037441R        ISZ TCNT
0433   02224 026222R        JMP *-2
0434   02225 126215R        JMP SKIP,I
```

```
0436*
0437*  VERIFY THAT NO DUPLICATE FILE NAMES EXIST
0438*
0439  02226 002400  LMAIN CLA
0440  02227 073424R       STA PTYPE
0441  02230 016261R       JSB INIDX     CLEAR PROGRAM USEAGE FLAGS
0442  02231 016265R CLRID JSB IDX       SET CURRENT IDENT ADDRESSES
0443  02232 026277R       JMP IDCLR
0444  02233 163312R       LDA ID3,I
0445  02234 010075        AND M1774
0446  02235 173312R       STA ID3,I     CLEAR USEAGE FLAG
0447  02236 163315R       LDA ID6,I     CHECK PROGRAM TYPE
0448  02237 010073        AND M177
0449  02240 050056        CPA .3        CHECK IF MAIN
0450  02241 026254R       JMP USCHK
0451  02242 050057        CPA .4         CHECK IF DEVICE DRIVER
0452  02243 026275R       JMP DDRV
0453  02244 050060        CPA .5        CHECK IF SEGMENT
0454  02245 026254R       JMP USCHK
0455  02246 002002        SZA           CHECK IF TYPE 0
0456  02247 026231R       JMP CLRID      NO, SO NOT MAIN
0457  02250 163315R CLR0  LDA ID6,I      CONVERT TYPES 0 & 4 TO 3
0458  02251 010075        AND M1774
0459  02252 030056        IOR .3
0460  02253 173315R       STA ID6,I
0461  02254 063310R USCHK LDA ID1
0462  02255 072261R       STA *+4
0463  02256 016001X       JSB EXEC
0464  02257 002263R       DEF *+4
0465  02260 007435R       DEF .18       REQUEST CODE
0466  02261 002261R       DEF *         FILE NAME ADDRESS
0467  02262 005440R       DEF SECT       # SECTORS
0468  02263 063440R       LDA SECT       GET # SECTORS IN FILE
0469  02264 002003        SZA,RSS       NON-ZERO--ALREADY IN FILE
0470  02265 026231R       JMP CLRID     TRY NEXT PROGRAM
0471  02266 063473R       LDA ERR06     PRINT DUPL FILE NAME ERROR CODE
0472  02267 016344R       JSB ERROR
0473  02270 060060        LDA .5        PRINT FILE NAME
0474  02271 067310R       LDB ID1
0475  02272 016331R       JSB SYOUT
0476  02273 037424R       ISZ PTYPE     INCR DUPL FILE FLAG
0477  02274 026231R       JMP CLRID     SEE IF ANY MORE DUPL FILES
0478*
0479  02275 073461R DDRV  STA DVR        SET DRIVER FLAG # 0
0480  02276 026250R       JMP CLR0      SET TYPE TO 3 TEMPORARILY
0481  02277 063424R IDCLR LDA PTYPE     CHECK IF ANY DUPL FILE FLAG SET
0482  02300 002002        SZA           NO
0483  02301 026631R       JMP ABORT     YES-SO ABORT LOADER
0484*
0485*  INITIALIZE DIRECTORY
0486*
0487  02302 060200        LDA DISCL      DISCL+1 = START T/S OF USER DIR
0488  02303 002004        INA
0489  02304 073356R       STA DSKID
0490  02305 063551R DRSCH LDA AIBUF     SET INITIAL IBUF POINTER
0491  02306 073336R       STA CURAI
```

```
0492  02307 063546R        LDA N128      SET IBUF COUNT
0493  02310 073374R        STA ICNT
0494  02311 017777R        JSB SETCR     SET USER DISC FLAG IN BASE PAGE
0495  02312 063356R        LDA DSKID     A IS DISC ADDRESS
0496  02313 067551R        LDB AIBUF     B IS CORE ADDRESS
0497  02314 016465R        JSB DISKI     READ IN 1 SECTOR OF USER DIR
0498  02315 163336R DRCHK  LDA CURAI,I
0499  02316 002003         SZA,RSS       CHECK IF AT END OF DIRECTORY
0500  02317 026357R        JMP ENDDR     END OF USER DIR FOUND
0501  02320 050052         CPA N1        CHECK IF AT END OF DIR SECTOR
0502  02321 002001         RSS           END OF SECTOR
0503  02322 026332R        JMP DRCH1     NOT AT END OF SECTOR
0504  02323 060174  DRCH0  LDA TSONE     INCREMENT SECTOR ADDRESS
0505  02324 073356R        STA DSKID
0506  02325 010074         AND M377
0507  02326 002002         SZA
0508  02327 026305R        JMP DRSCH     GO READ IN NEXT SECTOR
0509  02330 063477R DRCHA  LDA ERR10
0510  02331 026630R        JMP ABRTX     OUT OF DIRECTORY SPACE
0511  02332 067336R DRCH1  LDB CURAI     POINTER IN IBUF
0512  02333 044055         ADB .2        INCR TO NAME 5 - TYPE ADDRESS
0513  02334 160001         LDA B,I
0514  02335 010073         AND M177      ISOLATE TYPE
0515  02336 040045         ADA N6        CHECK IF 5 OR 11 WORD ENTRY
0516  02337 002021         SSA,RSS       SKIP=11 WORD DIRECTORY ENTRY
0517  02340 026347R        JMP DRCH5     5 WORD DIRECTORY ENTRY
0518  02341 044064         ADB .9        PROCESS 11 WORD ENTRY
0519  02342 077336R        STB CURAI
0520  02343 067374R        LDB ICNT
0521  02344 047431R        ADB .11
0522  02345 077374R        STB ICNT
0523  02346 026354R        JMP DRCH6     GO TRY NEXT ENTRY
0524  02347 044056  DRCH5  ADB .3        PROCESS 5 WORD ENTRY
0525  02350 077336R        STB CURAI
0526  02351 067374R        LDB ICNT
0527  02352 044060         ADB .5
0528  02353 077374R        STB ICNT
0529  02354 006021  DRCH6  SSB,RSS       CHECK IF PAST END OF SECTOR
0530  02355 026323R        JMP DRCH0
0531  02356 026315R        JMP DRCHK     TRY NEXT ENTRY
0532  02357 063374R ENDDR  LDA ICNT      CHECK IF ROOM FOR MORE ENTRIES
0533  02360 040065         ADA .10
0534  02361 002020         SSA           NO-SKIP
0535  02362 026400R        JMP LDABS     YES
0536  02363 003400         CCA
0537  02364 017661R        JSB OUTID     OUTPUT MORE DIRECTORY FOLLOWS FLA
0538  02365 067374R        LDB ICNT
0539  02366 057546R        CPB N128      CHECK IF NEW SECTOR
0540  02367 026375R        JMP DRCLR     GO CLEAR NEXT DRCTRY SECTOR
0541  02370 077443R        STB TEMP      SAVE ZERO OUTPUT COUNT
0542  02371 002400         CLA
0543  02372 017661R        JSB OUTID     OUTPUT ZERO TO DIRECT, BUFFER
0544  02373 037443R        ISZ TEMP
0545  02374 026371R        JMP *-3       GO OUTPUT ANOTHER ZERO
0546  02375 063356R DRCLR  LDA DSKID
0547  02376 067551R        LDB AIBUF
```

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0548  02377 016473R        JSB DISKO     CLEAR NEXT DRCTRY SECTOR
0549*
0550*  LOAD RELOCATABLES & CREATE ABSOLUTE CODE
0551*
0552  02400 063457R LDABS LDA UMFWA     SET INITIAL PROG RELOC ADDRESS
0553  02401 073327R       STA BGBND
0554  02402 073604R       STA COMAD
0555  02403 073426R       STA RELAD
0556  02404 073422R       STA PPREL
0557  02405 063462R       LDA LISTU
0558  02406 010072        AND M77
0559  02407 033442R       IOR M1100
0560  02410 073443R       STA TEMP
0561  02411 016001X       JSB EXEC      CALL EXEC TO PAGE LIST DEVICE
0562  02412 002416R       DEF *+4
0563  02413 000056        DEF .3
0564  02414 011443R       DEF TEMP
0565  02415 000041        DEF N10
0566  02416 063435R PRHED LDA .18       PRINT -RELOCATNNG LOADER- HEADING
0567  02417 067500R       LDB DOSHD
0568  02420 016364R       JSB DRKEY
0569  02421 016355R       JSB SPACE
0570  02422 063436R       LDA .36        PRINT "NAME/BOUNDS" HEADING
0571  02423 067512R       LDB NAENT
0572  02424 016364R       JSB DRKEY
0573  02425 016355R       JSB SPACE
0574  02426 063546R       LDA N128
0575  02427 073347R       STA DCNT      INITIALIZE ABSOLUTE OUTPUT COUNT
0576  02430 067550R       LDB ADBUF
0577  02431 077335R       STB CURAD     SET CURRENT DBUF ADDRESS
0578  02432 063352R       LDA DSKAB
0579  02433 073353R       STA DSKAD     SET CURRENT ABS DISC ADDRESS
0580  02434 060056        LDA .3        SET PROGRAM TYPE TO USER MAIN
0581  02435 073424R       STA PTYPE
0582  02436 063422R       LDA PPREL
0583  02437 073454R       STA XPREL
0584  02440 063304R       LDA BIDNT
0585  02441 073307R       STA CIDNT     SET CIDNT FOR IDSCN
0586  02442 063563R       LDA PLAD
0587  02443 073340R       STA CURAP
0588  02444 002400        CLA
0589  02445 073602R       STA LIBRY
0590  02446 073414R       STA PGCNT
0591  02447 037403R       ISZ LDING     SET LOADING FLAG
0592  02450 016450R BDLD  JSB IDSCN     SCAN FOR USER MAIN
0593  02451 026654R       JMP BDEND     END OF USER MAIN
0594  02452 167312R       LDB ID3,I     GET USEAGE FLAG
0595  02453 006014        SLB,INB       SKIP-PROG NOT LOADED
0596  02454 026450R       JMP BDLD      PROG LOADED
0597  02455 177312R       STB ID3,I     SET PROGRAM LOADED FLAG
0598  02456 163313R       LDA ID4,I      WD 4 OF IDENT TABLE FOR COMMON
0599  02457 001665        ELA,CLE,ERA    REMOVE BIT 15
0600  02460 043454R       ADA XPREL      ADD COMMON LENGTH TO BASE
0601  02461 073422R       STA PPREL     SET NEW RELOC ADDRESS
0602  02462 063310R       LDA ID1       SAVE MAIN IDENT ADDRESS FOR
0603  02463 073375R       STA IDMBS     SEGMENT REFERENCE
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0604   02464 016122R        JSB DINIT     INITIALIZE DISC STORE ADDRESSES
0605   02465 016355R        JSB SPACE
0606   02466 016774R        JSB LOAD      UOAD USER MAIN PROGRAM
0607   02467 063602R        LDA TPREL      SAVE END OF MAIN AS LAST
0608   02470 072771R        STA MAXSG        ADDRESS OF LARGEST MODULE
0609   02471 063374R        LDA ICNT       SAVE POINTERS NECESSARY TO
0610   02472 072772R        STA SAVE1        DEFINE DISC ADDRESS AND
0611   02473 063356R        LDA DSKID        OFFSET WITHIN SECTOR OF
0612   02474 072773R        STA SAVE2        MAIN PROGRAM'S DIRECTORY
0613   02475 017460R        JSB GENID     GENERATE DIRECTORY ENTRY
0614   02476 016114R        JSB REMDO     OUTPUT REMAINDER OF RECORD
0615   02477 037414R        ISZ PGCNT
0616   02500 016132R        JSB RESET     GO RESET DSKAD TO PROPER ADDRESS
0617   02501 002400         CLA
0618   02502 073602R        STA LIBRY
0619   02503 063353R        LDA DSKAD
0620   02504 073355R        STA DSKBS
0621   02505 063440R        LDA TBREL
0622   02506 067412R        LDB PBREL
0623   02507 016340R        JSB BPOUT     OUTPOT BP SECTION
0624   02510 063602R        LDA TPREL
0625   02511 073324R        STA BSPAD     SAVE PROG RELOC ADDR FOR BS
0626   02512 063440R        LDA TBREL
0627   02513 073323R        STA BSBAD     SET BP RELOC ADDR FOR BS
0628   02514 060060         LDA ,5        SET CURRENT TYPE TO SSER SEGMENT
0629   02515 073424R        STA PTYPE
0630   02516 063340R        LDA CURAP
0631   02517 002004         INA
0632   02520 073421R        STA PLMAN     SAVE CURRENT PROGRAM LIST ADDR
0633   02521 016261R        JSB INIDX
0634   02522 016265R BSLD   JSB IDX       SET IDENT ADDRESSES
0635   02523 026602R        JMP BSEND
0636   02524 063310R        LDA ID1
0637   02525 073377R        STA IMAIN     SAVE MAIN BS IDENT ADDRESS
0638   02526 163315R        LDA ID6,I
0639   02527 002021         SSA,RSS
0640   02530 026522R        JMP BSLD
0641   02531 010073         AND M177
0642   02532 050060         CPA ,5        SEGMENT?
0643   02533 002001         RSS           YES
0644   02534 026522R        JMP BSLD      NO- TRY NEXT ENTRY
0645   02535 163316R        LDA ID7,I     GET BS MAIN IDENT ADDRESS
0646   02536 002020         SSA
0647   02537 003004         CMA,INA
0648   02540 053375R        CPA IDMBS     DOES THIS CALL USER MAIN
0649   02541 002001         RSS           YES
0650   02542 026522R        JMP BSLD      NO-TRY NEXT ENTRY
0651   02543 063305R        LDA TIDNT     SAVE ADDR FOR NEST SEGMENT SCAN
0652   02544 073317R        STA ABSID
0653   02545 007400         CCB
0654   02546 077373R        STB HDFLG     SET HEADING FOR SEGMENT
0655   02547 016122R        JSB DINIT
0656   02550 016355R        JSB SPACE
0657   02551 017005R        JSB LOADS     LOAD LUSER SEGMENT
0658   02552 017460R        JSB GENID     GENERATE DIRECTORY ENTRY
0659   02553 016114R        JSB REMDO     OUTPUT REMAINDER OF ABS RECORD
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0660  02554 016132R        JSB RESET
0661  02555 002400         CLA
0662  02556 073602R        STA LIBRY
0663  02557 063440R        LDA TBREL
0664  02560 067323R        LDB BSBAD
0665  02561 016340R        JSB BPOUT     OUTPUT BASE PAGE SECTION
0666  02562 063323R        LDA BSBAD
0667  02563 067440R        LDB TBREL
0668  02564 016276R        JSB CLRLT     CLEAR BP LINKAGES
0669  02565 067602R        LDB TPREL      KEEP TRACK OF LARGEST SEQUENT
0670  02566 062771R        LDA MAXSG
0671  02567 003004         CMA,INA
0672  02570 043602R        ADA TPREL
0673  02571 002021         SSA,RSS
0674  02572 076771R        STB MAXSG
0675  02573 063323R        LDA BSBAD
0676  02574 073440R        STA TBREL     SET BP RELOC ADDR
0677  02575 063324R        LDA BSPAD
0678  02576 073602R        STA TPREL     SET PROG RELOC ADDR
0679  02577 063317R        LDA ABSID
0680  02600 073305R        STA TIDNT
0681  02601 026522R        JMP BSLD      GO LOAD NEXT SEGMENT
0682  02602 063353R BSEND   LDA DSKAD
0683  02603 073354R        STA DSKBR     SAVE CURRENT DISC ADDR OF ABS
0684  02604 063355R        LDA DSKBS
0685  02605 073353R        STA DSKAD     SET CURRENT BP CODE ADDRESS
0686  02606 063323R        LDA BSBAD
0687  02607 067412R        LDB PBREL
0688  02610 016340R        JSB BPOUT     OUTPUT BP CODE FOR MAIN
0689  02611 062771R        LDA MAXSG      HAS A SEGMENT BEEN LOADED?
0690  02612 053324R        CPA BSPAD
0691  02613 026641R        JMP BS1          NO- SKIP DIRECTORY UPDATE
0692  02614 062773R        LDA SAVE2      HAS SECTOR CONTAINING MAIN'S
0693  02615 053356R        CPA DSKID        DIRECTORY ENTRY BEEN OUTPUT?
0694  02616 026633R        JMP INCOR          NO- UPDATE IN CORE ONLY
0695  02617 067550R        LDB ADBUF          YES- DISC UPDATE REQUIRED
0696  02620 016465R        JSB DISKI
0697  02621 066772R        LDB SAVE1      COMPUTE NECESSARY OFFSET INTO
0698  02622 047547R        ADB .128         MAIN'S DIRECTORY ENTRY
0699  02623 047550R        ADB ADBUF
0700  02624 044065         ADB .10
0701  02625 062771R        LDA MAXSG      STORE LARGEST ADDRESS IN WORD 11
0702  02626 170001         STA B,I          OF MAIN'S DIRECTORY ENTRY
0703  02627 062773R        LDA SAVE2      RE-WRITE DIRECTORY ENTRY
0704  02630 067550R        LDB ADBUF
0705  02631 016473R        JSB DISKO
0706  02632 026641R        JMP BS1
0707  02633 066772R INCOR   LDB SAVE1      COMPUTE OFFSET IN MEMORY BUFFER
0708  02634 047547R        ADB .128
0709  02635 047551R        ADB AIBUF
0710  02636 044065         ADB .10
0711  02637 062771R        LDA MAXSG      STORE LARGEST SEGMENT VALUE IN
0712  02640 170001         STA B,I          MAIN'S DIRECTORY ENTRY
0713  02641 063354R BS1     LDA DSKBR
0714  02642 073353R        STA DSKAD     SET CURRENT ABS DISC ADDRESS
0715  02643 063412R        LDA PBREL
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0716  02644 067323R        LDB BSBAD
0717  02645 016276R        JSB CLRLT     CLEAR BP LINKAGES
0001  02646 060056         LDA ,3
0002  02647 073424R        STA PTYPE     SET PROG TYPE TO USER MAIN
0003  02650 016527R        JSB CLID3     CLEAR PROG LOADED FLAG
0004  02651 063563R        LDA PLAD
0005  02652 073340R        STA CURAP      RESET PLIST POINTER
0006  02653 026450R        JMP BDLD      LOAD NEXT USER MAIN
0007  02654 016355R BDEND  JSB SPACE
0008  02655 063414R        LDA PGCNT     CHECK IF ANY PROGRAMS LOADED
0009  02656 002002         SZA           SKIP=NO PROGRAMS LOADED
0010  02657 026664R        JMP BD005
0011  02660 063435R        LDA ,18
0012  02661 066757R        LDB NOLOD
0013  02662 016331R        JSB SYOUT
0014  02663 026667R        JMP BD010
0015  02664 063433R BD005  LDA ,14
0016  02665 066747R        LDB CMESS
0017  02666 016331R        JSB SYOUT
0018  02667 016635R BD010  JSB SET
0019*
0020*  LOADER TERMINATION
0021*
0022  02670 002400  LTERM  CLA
0023  02671 017661R        JSB OUTID
0024  02672 017777R        JSB SETCR      SET USER DISC FLAG IN BASE PAGE
0025  02673 063356R        LDA DSKID
0026  02674 002003         SZA,RSS
0027  02675 026725R        JMP LTERZ
0028  02676 067581R        LDB AIBUF
0029  02677 016473R        JSB DISKO     OUTPUT LAST DIRECTORY BUFFER
0030  02700 063414R        LDA PGCNT
0031  02701 002003         SZA,RSS
0032  02702 026725R        JMP LTERZ
0033  02703 063353R        LDA DSKAD     UPDATE USER FILE T/S BOUNDARY
0034  02704 067560R        LDB DFUTS        IN BASE PAGE
0035  02705 016003R        JSB BPSTR
0036  02706 060155         LDA SYSSC
0037  02707 050161         CPA CUDSC
0038  02710 002001         RSS
0039  02711 026715R        JMP LTERX      OK - USER NOT ON SYSTEM
0040  02712 063353R        LDA DSKAD
0041  02713 067561R        LDB DFSTS      LIKEWISE SET SYNTS = UDNTS
0042  02714 016003R        JSB BPSTR      STORE A IN B
0043  02715 060200  LTERX  LDA DISCL
0044  02716 067550R        LDB ADBUF
0045  02717 016465R        JSB DISKI
0046  02720 060157         LDA UDNTS      NEXT T/S AVAILABLE IN USER AREA
0047  02721 073706R        STA DBUF+64
0048  02722 060200         LDA DISCL
0049  02723 067550R        LDB ADBUF      WRITE OUT SYS BUFFER SECTOR
0050  02724 016473R        JSB DISKO
0051  02725 060331  LTERZ  LDA SSFLG      RESTORE SS FLAG
0052  02726 053506R        CPA ASCNO
0053  02727 026733R        JMP LTERW
0054  02730 063432R        LDA SAVSS
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0055  02731 067507R        LDB XSSFL
0056  02732 016003R        JSB BPSTR      RESTORE SS FLAG IN BASE PAGE
0057  02733 016001X LTERM  JSB EXEC       REQUEST PROGRAM COMPLETION
0058  02734 002736R        DEF *+2
0059  02735 000061         DEF ,6
0060*
0061  02736 002737R MESAB  DEF *+1
0062  02737 046117         ASC 8,LOADR TERMINATED
0063  02747 002750R CMESS  DEF *+1
0064  02750 046117         ASC 7,LOADR COMPLETE
0065  02757 002760R NOLOD  DEF *+1
0066  02760 047117         ASC 9,NO PROGRAMS LOADED
0067  02771 000000  MAXSG  NOP            LARGEST SEGMENT ADDRESS
0068  02772 000000  SAVE1  NOP            SAVED DIRECTORY OFFSET
0069  02773 000000  SAVE2  NOP            SAVED DIRECTORY DISC ADDRESS
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0071*     LOAD PROVIDES ENTRY TO LOADS FOR THOSE PROGRAMS WHICH REQUIRE
0072*  USE OF A NEW BASE PAGE AND PROGRAM BASE.
0073*
0074   02774 000000  LOAD  NOP
0075   02775 007400        CCB             SET HEADING FLAG
0076   02776 077373R       STB HDFLG
0077   02777 063422R       LDA PPREL
0078   03000 073602R       STA TPREL       SET CURRENT PROG RELOC ADDRESS
0079   03001 063412R       LDA PBREL
0080   03002 073440R       STA TBREL       SET CURRENT BP RELOC ADDRESS
0081   03003 017005R       JSB LOADS
0082   03004 126774R       JMP LOAD,I      RETURN
0083*
0084*     LOADS IS THE MAIN LOADING ROUTINE FOR GENERATING THE ABSOLUTE
0085*  CODE AND LINKING ALL CALLED SUBROUTINES. IT IS USED BY MAIN AND
0086* SEGMENT PROGRAM TYPES. IT READS THE RELOCATABLE RECORDS FROM THE
0087*  SCRATCH PORTION OF THE DISC, AND WRITES THE ABSOLUTE CODE ON THE
0088*  USER FILE AREA OF THE DISC.
0089*
0090   03005 000000  LOADS NOP
0091   03006 003400        CCA
0092   03007 073417R       STA PLFLG       SET NO DBL RECORDS IN FLAG
0093   03010 002400  LOADN CLA             INITIALLY SET FOR PASS 1
0094   03011 073416R LD3   STA L001        PASS 2 WHEN LENGTH OF LOW LINK F
0095   03012 003400        CCA             SET FOR UPPER LINK
0096   03013 073411R       STA LWH1          AREA PRESENT
0097   03014 067416R       LDB L001        IF PASS 1,
0098   03015 006002        SZB               SAVE PROGRAM & BASE PAGE
0099   03016 027023R       JMP LD1           STARTING RELOCATION ADDRESSES
0100   03017 063602R       LDA TPREL
0101   03020 073414R       STA LWH4
0102   03021 063440R       LDA TBREL
0103   03022 073413R       STA LWH3
0104   03023 063177R LD1   LDA RSS         RESTORE SKIP INSTRUCTION
0105   03024 073331R       STA BLIN3
0106   03025 002400        CLA             SET FOR PASS 1 OR 2
0107   03026 073417R LOADX STA L01         PASS 3 WHEN LOW LINK OUT TO DISC
0108   03027 063416R       LDA L001        IF PASS 2 OR 3 (IE. SOME LOADING
0109   03030 002003        SZA,RSS           HAS BEEN PERFORMED), CLEAR
0110   03031 027035R       JMP LD2           BASE PAGE LINK ADDRESSES IN
0111   03032 063413R       LDA LWH3          LST ENTRIES
0112   03033 067440R       LDB TBREL
0113   03034 016276R       JSB CLRLT
0114   03035 063414R LD2   LDA LWH4        RESTORE ORIGINAL PROG RELOCATION
0115   03036 067417R       LDB L01           BASE, UNLESS PASS 3. IF PASS 3
0116   03037 006003        SZB,RSS           RELOCATION BASE HAS BEEN AD-
0117   03040 073602R       STA TPREL         JUSTED PAST LOW LINK AREA.
0118   03041 063413R       LDA LWH3        RESTORE ORIGINAL BASE PAGE
0119   03042 073440R       STA TBREL         RELOCATION BASE.
0120   03043 016436R       JSB CLIST       BLANK MEMORY MAP BUFFER
0121   03044 002400        CLA
0122   03045 167316R       LDB ID7,I
0123   03046 006020        SSB
0124   03047 002004        INA
0125   03050 073442R       STA TDIR
0126   03051 063557R       LDA AMLST       ADDR OF MEMORY MAP BUFFER
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0127  03052 073320R        STA AMAD
0128  03053 063373R        LDA HDFLG      CHECK IF MAIN OR SEGMENT LOADING
0129  03054 073410R        STA TEMP2
0130  03055 002021         SSA,RSS
0131  03056 037320R        ISZ AMAD
0132  03057 163310R        LDA ID1,I      STORE NAME INTO MEMORY MAP
0133  03060 173320R        STA AMAD,I
0134  03061 037320R        ISZ AMAD
0135  03062 073463R        STA ZBUF
0136  03063 163311R        LDA ID2,I
0137  03064 173320R        STA AMAD,I
0138  03065 037320R        ISZ AMAD
0139  03066 073464R        STA ZBUF+1
0140  03067 163312R        LDA ID3,I
0141  03070 010075         AND M1774
0142  03071 073465R        STA ZBUF+2
0143  03072 033452R        IOR BLANK
0144  03073 173320R        STA AMAD,I
0145*
0146*     DISET INTERROGATES BIT 15 OF WD 4 OF THE
0147*  IDENT TABLE.
0148*     BIT15 = 1;  FLAG DISCX IS SET(USER AREA)
0149*     BIT15 =0;  FLAG DISCX IS CLEARED(SYSTEM AREA)
0150*
0151  03074 064056         LDB .3
0152  03075 163313R        LDA ID4,I
0153  03076 002021         SSA,RSS
0154  03077 064055         LDB .2
0155  03100 077351R        STB DISCX
0156*
0157  03101 063417R        LDA L01        PASS 3?
0158  03102 002002         SZA
0159  03103 027107R        JMP LD4          YES - TEST REAL FLAG
0160  03104 037410R        ISZ TEMP2        NO  - TEST TEMPORARY HDFLG
0161  03105 027153R        JMP SUBHD
0162  03106 027111R        JMP LD5
0163  03107 037373R LD4    ISZ HDFLG      TEST REAL HDFLG
0164  03110 027153R        JMP SUBHD
0165*
0166  03111 063353R LD5    LDA DSKAD      GET CURRENT DISC ADDRESS
0167  03112 067417R        LDB L01        IF NOT PASS 3,
0168  03113 006003         SZB,RSS
0169  03114 073357R        STA DSKMN            SAVE
0170  03115 063424R        LDA PTYPE      CHECK PROGRAM TYPE
0171  03116 050060         CPA .5
0172  03117 027124R        JMP BGSPL            SEGMENT SO CLEAR PLIST
0173  03120 063546R        LDA N128
0174  03121 073416R        STA PLCNT      SET PLIST WORD COUNT
0175  03122 067563R        LDB PLAD
0176  03123 027133R        JMP CPLST      CLEAR PROGRAM LIST
0177  03124 063563R BGSPL  LDA PLAD
0178  03125 003004         CMA,INA
0179  03126 043421R        ADA PLMAN
0180  03127 043546R        ADA N128
0181  03130 073416R        STA PLCNT
0182  03131 067421R        LDB PLMAN
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0183   03132 027141R        JMP CPXXX
0184   03133 063310R CPLST  LDA ID1        GET IDENT ADDR OF MAIN AND SET
0185   03134 170001         STA B,I              INTO PLIST
0186   03135 006004         INB            INCR CURRENT PLIST ADDRESS
0187   03136 037416R        ISZ PLCNT      SKIP-PLIST FULL
0188   03137 002001         RSS
0189   03140 027146R        JMP SETMP      NO PLIST CLEARING REQUIRED
0190   03141 002400  CPXXX  CLA
0191   03142 170001         STA B,I        CLEAR PLIST WORD
0192   03143 006004         INB
0193   03144 037416R        ISZ PLCNT
0194   03145 027142R        JMP *-3
0195   03146 063414R SETMP  LDA LWH4
0196   03147 073427R        STA SV1        SAVE STARTING PROGRAM BOUND
0197   03150 063413R        LDA LWH3
0198   03151 073430R        STA SV2        SAVE STARTING BASE PAGE BOUND
0199   03152 027161R        JMP OUTLN      OUTPUT NAME ONLY IF MAIN/SEGMENT
0200   03153 063414R SUBHD  LDA LWH4
0201   03154 067553R        LDB AMEM5
0202   03155 016370R        JSB CONVD      CONVERT LOAD ADDRESS TO ASCII
0203   03156 063413R        LDA LWH3
0204   03157 067555R        LDB AME12
0205   03160 016370R        JSB CONVD      CONVERT SUBR BP STARTING ADDRESS
0206*
0207   03161 063417R OUTLN  LDA L01        PASS 3?
0208   03162 002003         SZA,RSS
0209   03163 027167R        JMP LD6          NO- SKIP MEMORY MAP
0210   03164 063436R        LDA .36
0211   03165 067557R        LDB AMLST
0212   03166 016364R        JSB DRKEY      OUTPUT LINE TO LIST UNIT
0213   03167 163314R LD6    LDA ID5,I
0214   03170 016727R        JSB INNAM      INPUT NAM RECORD
0215   03171 063337R        LDA CURAL      GET RECORD TYPE
0216   03172 002004         INA
0217   03173 160000         LDA A,I
0218   03174 001723         ALF,RAR
0219   03175 010062         AND .7
0220   03176 050054         CPA .1         NAME RECORD?
0221   03177 002001  RSS    RSS
0222   03200 026641R        JMP NMERR
0223   03201 063337R        LDA CURAL
0224   03202 040061         ADA .6
0225   03203 160000         LDA A,I
0226   03204 073420R        STA PLGTH      SAVE PROGRAM LENGTH
0227   03205 017164R        JSB ALINK      SET UP LOW LINK AREA FOR CP LINK
0228   03206 067602R        LDB TPREL
0229   03207 077426R        STB RELAD      SET CURRENT RELOCATION ADDRESS
0230   03210 063602R        LDA LIBRY
0231   03211 002002         SZA
0232   03212 027226R        JMP BPN
0233   03213 063337R        LDA CURAL
0234   03214 040064         ADA .9
0235   03215 160000         LDA A,I
0236   03216 010073         AND M177
0237   03217 050061         CPA .6
0238   03220 027224R        JMP SUBH5
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0239  03221 050062        CPA .7
0240  03222 002001        RSS
0241  03223 027226R       JMP BPN
0242  03224 063602R SUBH5 LDA TPREL
0243  03225 073602R       STA LIBRY
0244  03226 163337R BPN   LDA CURAL,I   UPDATE TO END OF NAM RECORED
0245  03227 001727        ALF,ALF
0246  03230 010074        AND M377
0247  03231 070001        STA B
0248  03232 063337R       LDA CURAL
0249  03233 040001        ADA B
0250  03234 073337R       STA CURAL     SET TO END OF NAM RECORD
0251  03235 063402R       LDA LCNT
0252  03236 040001        ADA B
0253  03237 073402R       STA LCNT      SET NEW CURRENT COUNT
0254  03240 016721R CLSRC JSB DBSET
0255  03241 163337R       LDA CURAL,I
0256  03242 064000        LDB A
0257  03243 001723        ALF,RAR
0258  03244 010062        AND .7
0259  03245 050055        CPA .2
0260  03246 027513R       JMP DENTR     GO TO ENT RECORD PROCESSOR
0261  03247 050056        CPA .3
0262  03250 027713R       JMP DDBLR     GO TO DBL RECORD PROCESSOR
0263  03251 050057        CPA .4
0264  03252 027514R       JMP DEXTR     GO TO EXT RECORD PROCESSOR
0265  03253 050060        CPA .5
0266  03254 027256R       JMP DENDR     GO TO END RECORD PROCESSOR
0267  03255 026641R       JMP NMERR
0268*
0269* END RECORD PROCESSOR
0270*
0271  03256 063417R DENDR LDA L01       IF END DETECTED DURING PASS 2,
0272  03257 002002        SZA             SET LWH1=0 TO INDICATE NO
0273  03260 027263R       JMP LD7         UPPER LINK AREA, THEN OUTPUT
0274  03261 073411R       STA LWH1        LOW LINK AREA TO
0275  03262 027316R       JMP CROSS       DISC
0276  03263 163337R LD7   LDA CURAL,I
0277  03264 010062        AND .7        SAVE TRANSFER & RELOCATION INDIC
0278  03265 073310R       STA PENTZ
0279  03266 016721R       JSB DBSET
0280  03267 016721R       JSB DBSET
0281  03270 037426R       ISZ RELAD
0282  03271 067373R       LDB HDFLG     ONLY WORRY ABOUT TRANSFER ADDR
0283  03272 006002        SZB             IF PROGRAM IS A MAIN OR SEGMENT
0284  03273 027317R       JMP DEN20
0285  03274 067310R       LDB PENTZ     TRANSFER ADDRESS PRESENT?
0286  03275 004010        SLB
0287  03276 027311R       JMP DEN30       YES- COMPUTE RELOC, TRANS ADDR
0288  03277 063420R       LDA PLGTH       NO- CHECK PROGRAM LENGTH
0289  03300 002003        SZA,RSS             ZERO LENGTH (LIBRARY)?
0290  03301 027316R       JMP DEN10            YES- IGNORE L08 ERROR
0291  03302 063457R       LDA UMFWA     SET PRIMARY ENTRY FOR DRIVER
0292  03303 067461R       LDB DVR       IS THIS TYPE 4  -
0293  03304 054057        CPB .4          DEVICE DRIVER?
0294  03305 027316R       JMP DEN10          YES - IGNORE L08 ERROR
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0295  03306 063475R        LDA ERR08      NO SO OUTPUT ERROR MESSAGE
0296  03307 026630R        JMP ABRTX      ABORT LOADR
0297  03310 000000  PENTZ  NOP           PRIMARY ENTRY PRESENT FLAG
0298*
0299  03311 005100  DEN30  BRS           REMOVE TRANSFER ADDR, INDICATOR
0300  03312 047600R        ADB RBTAD
0301  03313 006004         INB
0302  03314 160001         LDA B,I       GET PROPER RELOCATION BASE
0303  03315 143337R        ADA CURAL,I    ADD RELOC VALUE FROM END RECORD
0304  03316 073423R DEN10  STA PRENT     SAVE PRIMARY ENTRY POINT
0305  03317 016151R DEN20  JSB DEBUG
0306  03320 016230R        JSB INLST
0307  03321 016234R CLST   JSB LSTX      SET LST ADDRESS
0308  03322 027327R        JMP LSTCR     END OF LST
0309  03323 163301R        LDA LST3,I
0310  03324 010075         AND M1774     CLEAR LST ORDINAL
0311  03325 173301R        STA LST3,I
0312  03326 027321R        JMP CLST      CONTINUE CLEARING ORDINAL
0313  03327 063420R LSTCR  LDA PLGTH     GET PROGRAM LENGTH
0314  03330 001265         RAL,CLE,ERA   SET E=SIGN
0315  03331 043602R        ADA TPREL     ADD PROGRAM RELOCATION BASE
0316  03332 002040         SEZ           SKIP IF ASSEMBLER PRODUCED
0317  03333 063426R        LDA RELAD     GET CURRENT RELOCATION ADDRESS
0318  03334 073602R        STA TPREL     SET NEW RELOCATION BASE
0319  03335 070001         STA B
0320  03336 063426R        LDA RELAD     GET LAST WORD ADDRESS
0321  03337 003004         CMA,INA
0322  03340 044000         ADB A         ADD RELOCATION BASE
0323  03341 006003         SZB,RSS
0324  03342 027346R        JMP *+4
0325  03343 002400         CLA
0326  03344 067602R        LDB TPREL
0327  03345 017705R        JSB LABDO
0328  03346 063417R        LDA L01       IF PASS 3,
0329  03347 002021         SSA,RSS         OUTPUT UPPER
0330  03350 017355R        JSB BLINK       LINK AREA
0331  03351 063546R        LDA N128
0332  03352 073416R        STA PLCNT     SET PROG LIST COUNTER
0333  03353 067563R        LDB PLAD      GET ADDR OF PROGRAM LIST
0334  03354 160001  PLSCN  LDA B,I       GET PROGRAM LIST ENTRY
0335  03355 002003         SZA,RSS       SKIP-ENTRY IN PLIST
0336  03356 027436R        JMP DEIDG
0337  03357 002020         SSA           SKIP IF PROG LOADED
0338  03360 027475R        JMP ENTID     GET NEXT PROG IDENT ADDRESS
0339  03361 006004  EPLST  INB           INCR PROGRAM LIST ADDRESS
0340  03362 037416R        ISZ PLCNT     SKIP IF END OF PROGRAM LIST
0341  03363 027354R        JMP PLSCN     NO-CONTINUE PROG LIST SEARCH
0342  03364 016355R CLFLG  JSB SPACE     SKIP A LINE
0343  03365 016436R        JSB CLIST     CLEAR OUTPUT BUFFER
0344  03366 067431R        LDB BNDHD     PUT "(BOUNDS)" IN OUTPUT BUFFER
0345  03367 160001         LDA B,I
0346  03370 073252R        STA MLIST
0347  03371 006004         INB
0348  03372 160001         LDA B,I
0349  03373 073253R        STA MLIST+1
0350  03374 006004         INB
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0351  03375 160001         LDA B,I
0352  03376 073254R        STA MLIST+2
0353  03377 006004         INB
0354  03400 160001         LDA B,I
0355  03401 073255R        STA MLIST+3
0356  03402 063427R        LDA SV1
0357  03403 067553R        LDB AMEM5
0358  03404 016370R        JSB CONVD      CONVERT STARTING PROGRAM BOUND
0359  03405 063430R        LDA SV2
0360  03406 067555R        LDB AME12
0361  03407 016370R        JSB CONVD      CONVERT STARTING BASE PG BOUND
0362  03410 063602R        LDA TPREL
0363  03411 067554R        LDB AMEM8
0364  03412 016370R        JSB CONVD      CONVERT ENDING PROGRAM BOUND
0365  03413 063440R        LDA TBREL
0366  03414 067556R        LDB AME15
0367  03415 016370R        JSB CONVD      CONVERT ENDING BASE PG BOUND
0368  03416 063436R        LDA .36
0369  03417 067557R        LDB AMLST
0370  03420 016364R        JSB DRKEY      OUTPUT BOUNDS TO LIST DEVICE
0371  03421 016355R        JSB SPACE
0372*
0373  03422 063424R        LDA PTYPE      GET PROGRAM TYPE
0374  03423 050056         CPA .3         USER MAIN
0375  03424 127005R        JMP LOADS,I    RETURN
0376  03425 016527R        JSB CLID3      CLEAR PROG LOADED FLAGS
0377  03426 127005R        JMP LOADS,I    RETURN
0378  03427 000000  SV1     NOP
0379  03430 000000  SV2     NOP
0380  03431 003432R BNDHD   DEF **1
0381  03432 024102          ASC 4,(BOUNDS)
0382  03436 063343R DEIDG   LDA DBFLG      CHECK IF DEBUG TO BE LOADED
0383  03437 002003          SZA,RSS
0384  03440 027364R         JMP CLFLG          NO
0385  03441 063332R         LDA CLXXX    CHECK IF ALREADY LOADED
0386  03442 002002          SZA
0387  03443 027364R         JMP CLFLG          YES
0388  03444 037332R         ISZ CLXXX    INCR DEBUG LOADED FLAG
0389  03445 077443R         STB TEMP
0390  03446 016230R         JSB INLST    SEARCH FOR DEBUG IN LST
0391  03447 016234R DEI10   JSB LSTX
0392  03450 026637R         JMP RCERR
0393  03451 163277R         LDA LST1,I
0394  03452 053461R         CPA CHRDE
0395  03453 002001          RSS
0396  03454 027447R         JMP DEI10    TRY NEXT LST
0397  03455 163300R         LDA LST2,I
0398  03456 053462R         CPA CHRDE+1
0399  03457 002001          RSS
0400  03460 027447R         JMP DEI10    TRY NEXT LST
0401  03461 163301R         LDA LST3,I
0402  03462 010075          AND M1774
0403  03463 070001          STA B
0404  03464 063463R         LDA CHRDE+2
0405  03465 010075          AND M1774
0406  03466 050001          CPA B
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0407  03467 002001         RSS             DEBUG FOUND
0408  03470 027447R        JMP DEI10        TRY NEXT ENTRY
0409  03471 067443R        LDB TEMP
0410  03472 163302R        LDA LST4,I
0411  03473 033447R        IOR MSIGN
0412  03474 170001         STA B,I         SET IDENT ADDRESS IN PLIST TABLE
0413  03475 001265  ENTID   RAL,CLE,ERA     CLEAR SIGN(PROG TO BE LOADED)
0414  03476 073305R        STA TIDNT        SET IDENT ADDR FOR IDX
0415  03477 072210R        STA TBUF         SAVE CURRENT IDENT ADDRESS
0416  03500 077340R        STB CURAP        SAVE CURRENT PLIST ADDRESS
0417  03501 016265R        JSB IDX          SET IDENT ADDRESSES
0418  03502 026637R        JMP RCERR
0419  03503 067340R        LDB CURAP        GET CURRENT PLIST ADDRESS
0420  03504 163312R        LDA ID3,I        GET PROGRAM USAGE FLAG
0421  03505 002014         SLA,INA          SKIP-PROG NOT YET LOADED
0422  03506 027361R        JMP EPLST        TEST FOR END OF PLIST
0423  03507 173312R        STA ID3,I        SET PROG USEAGE FLAG-LOADED
0424  03510 062210R        LDA TBUF         GET CURRENT IDENT ADDRESS
0425  03511 170001         STA B,I          SET ENTRY IN PROG LIST
0426  03512 027010R        JMP LOADN        LOAD NEXT PROGRAM
0427*
0428* ENT/EXT RECORD PROCESSOR
0429*
0430  03513 003401  DENTR   CCA,RSS          SET ENT FLAG
0431  03514 002400  DEXTR   CLA              SET EXT FLAG
0432  03515 073407R        STA NXFLG        SAVE ENT/EXT FLAG
0433  03516 060001         LDA B
0434  03517 010071         AND M37
0435  03520 003004         CMA,INA
0436  03521 073370R        STA EXCNT        SET SYMBOL COUNTER
0437  03522 016721R        JSB DBSET        GET ADDR OF NEXT WORD IN LBUF
0438  03523 016721R        JSB DBSET        GET ADDR OF NEXT WORD IN LBUF
0439  03524 163337R NXSYM  LDA CURAL,I
0440  03525 072210R        STA TBUF         SAVE NAME 1,2
0441  03526 016721R        JSB DBSET
0442  03527 163337R        LDA CURAL,I
0443  03530 072211R        STA TBUF+1       SAVE NAME 3,4
0444  03531 016721R        JSB DBSET
0445  03532 163337R        LDA CURAL,I
0446  03533 072212R        STA TBUF+2       SAVE NAME 5
0447  03534 016721R        JSB DBSET
0448  03535 016230R        JSB INLST        INITIALIZE LSTX
0449  03536 016234R ENEX1  JSB LSTX         SET LST ADDRESSES
0450  03537 027560R        JMP XXXX1
0451  03540 062210R        LDA TBUF
0452  03541 153277R        CPA LST1,I       NAME 1,2 EQUAL?
0453  03542 002001         RSS              YES
0454  03543 027536R        JMP ENEX1        NO-TRY NEXT LST ENTRY
0455  03544 062211R        LDA TBUF+1
0456  03545 153300R        CPA LST2,I       NAME 3,4 EQUAL?
0457  03546 002001         RSS              YES
0458  03547 027536R        JMP ENEX1        NO-TRY NEXT LST ENTRY
0459  03550 062212R        LDA TBUF+2
0460  03551 010075         AND M1774
0461  03552 070001         STA B
0462  03553 163301R        LDA LST3,I       UPPER CHAR OF
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0463  03554 010075          AND M1774       NAME 5 EQUAL?
0464  03555 050001          CPA B
0465  03556 002001          RSS             YES
0466  03557 027536R         JMP ENEX1       NO-TRY NEXT LST ENTRY
0467  03560 063407R XXXX1   LDA NXFLG
0468  03561 002003          SZA,RSS         SKIP IF ENT
0469  03562 027625R         JMP EXT2        GO TO PROCESS EXT
0470  03563 062212R         LDA TBUF+2
0471  03564 010056          AND .3
0472  03565 043600R         ADA RBTAD
0473  03566 002004          INA
0474  03567 164000          LDB A,I         GET CURRENT RELOCATION BASE
0475  03570 147337R         ADB CURAL,I     ADD CURRENT RELOC VALUE
0476  03571 077410R         STB OPRND       SAVE ABS ENT PT ADDRESS
0477  03572 163303R         LDA LST5,I      GET BP LINK ADDRESS
0478  03573 002003          SZA,RSS         SKIP-BP LINK ADDR SET
0479  03574 016601R         JSB BPSCN       SET BP LINK ADDR,BP LINK
0480  03575 173303R         STA LST5,I      SET BP LINK ADDR IN LST
0481  03576 016671R         JSB SETOP       SET OPERAND IN BASE PAGE
0482  03577 063417R         LDA L01         UNLESS IT'S
0483  03600 002003          SZA,RSS           PASS 3, SKIP
0484  03601 027623R         JMP NLENT         ENT LIST
0485  03602 016436R         JSB CLIST       CLEAR MEMORY MAP BUFFER
0486  03603 063450R         LDA BLAST
0487  03604 073253R         STA MLIST+1
0488  03605 163277R         LDA LST1,I
0489  03606 073254R         STA MLIST+2     SET NAME 1,2 IN MEMORY MAP
0490  03607 163300R         LDA LST2,I
0491  03610 073255R         STA MLIST+3     SET NAME 3,4 IN MEMORY MAP
0492  03611 163301R         LDA LST3,I
0493  03612 010075          AND M1774
0494  03613 033452R         IOR BLANK
0495  03614 073256R         STA MLIST+4     SET NAME 5 IN MEMORY MAP
0496  03615 063410R         LDA OPRND       GET ABSOLUTE ENTRY PT ADDRESS
0497  03616 067553R         LDB AMEM5
0498  03617 016370R         JSB CONVD       CONVERT TO ASCII
0499  03620 063434R         LDA .16
0500  03621 067557R         LDB AMLST
0501  03622 016364R         JSB DRKEY       PRINT ENTRY POINT
0502  03623 016721R NLENT   JSB DBSET       GET ADDR OF NEXT WORD IN LBUF
0503  03624 027710R         JMP EXEND       GO PROCESS NEXT SYMBOL
0504  03625 062212R EXT2    LDA TBUF+2      GET ORDINAL
0505  03626 173301R         STA LST3,I      SET ORDINAL IN LST
0506  03627 163303R         LDA LST5,I      GET BP LINK ADDRESS
0507  03630 002003          SZA,RSS         SKIP-BP LINK ADDRESS SET
0508  03631 016702R         JSB ALLOC       ALLOCATE NEW BP LOCATION
0509  03632 173303R         STA LST5,I      SET NEW BP LINK ADDRESS
0510  03633 163302R         LDA LST4,I      GET IDENT ADDRESS
0511  03634 002002          SZA
0512  03635 002020          SSA
0513  03636 027710R         JMP EXEND       IGNORE UNDEFINED PROGRAM CALL
0514  03637 073305R         STA TIDNT       SET ID ADDR FOR IDX
0515  03640 063310R         LDA ID1         GET CURRENT IDENT ADDR
0516  03641 072210R         STA TBUF        SAVE CURRENT IDENT ADDRESS
0517  03642 016265R         JSB IDX
0518  03643 027710R         JMP EXEND
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0519   03644 163315R        LDA ID6,I      GET M/S, TYPE
0520   03645 072211R        STA TBUF+1
0521   03646 163312R        LDA ID3,I      GET PROGRAM USEAGE FLAG
0522   03647 072212R        STA TBUF+2
0523   03650 062210R        LDA TBUF       GET CURRENT IDENT ADDRESS
0524   03651 073305R        STA TIDNT
0525   03652 016265R        JSB IDX
0526   03653 027710R        JMP EXEND
0527   03654 062211R        LDA TBUF+1     GET M/S, TYPE FOR EXT
0528   03655 001265          RAL,CLE,ERA    SET E=M/S
0529   03656 010073          AND M177       ISOLATE TYPE
0530   03657 050061          CPA .6
0531   03660 027665R        JMP LIBUT      LIBRARY-TEST FOR LOADING
0532   03661 050062          CPA .7
0533   03662 027665R        JMP LIBUT
0534   03663 002040          SEZ            SKIP-NOT MAIN PROGRAM
0535   03664 027710R        JMP EXEND      IGNORE PROGRAM CALL
0536   03665 063546R LIBUT  LDA N128
0537   03666 073416R        STA PLCNT      SET PROGRAM LIST COUNTER
0538   03667 067563R        LDB PLAD       GET PROGRAM LIST ADDRESS
0539   03670 160001  PLEXT  LDA B,I        GET PROG LIST ENTRY
0540   03671 002003          SZA,RSS        SKIP IF IDENT ADDRESS
0541   03672 027702R        JMP SEXT       MAKE ENTRY IN PROG LIST
0542   03673 001265          RAL,CLE,ERA    CLEAR SIGN
0543   03674 153302R        CPA LST4,I     PROG PREVIOUSLY CALLED?
0544   03675 027710R        JMP EXEND      YES-IGNORE EXT SYMBOL
0545   03676 006004          INB            INCR PROG LIST ADDR
0546   03677 037416R        ISZ PLCNT      END OF PROG LIST?
0547   03700 027670R        JMP PLEXT      NO-GO GET NEXT PROGRAM
0548   03701 027710R        JMP EXEND      TEST FOR ALL EXT PROCESSED
0549   03702 062212R SEXT   LDA TBUF+2     GET PROGRAM USEAGE FLAG
0550   03703 000010          SLA            SKIP-PROGRAM NOT LOADED
0551   03704 027710R        JMP EXEND      OMIT PROGRAM LIST ENTRY
0552   03705 163302R        LDA LST4,I     GET CALLED PROG IDENT ADDR
0553   03706 033447R        IOR MSIGN      SET SIGN TO SHOW NOT LOADED
0554   03707 170001          STA B,I        SET IN PROGRAM LIST
0555   03710 037370R EXEND  ISZ EXCNT      SKIP-ALL SYMBOLS PROCESSED
0556   03711 027524R        JMP NXSYM      NO-PROCESS NEXT SYMBOL
0557   03712 027240R        JMP CLSRC      NO-CLASSIFY NEXT RECORD
0558*
0559* DBL RECORD PROCESSOR
0560*
0561   03713 060001  DDBLR  LDA B
0562   03714 010072          AND M77
0563   03715 003004          CMA,INA
0564   03716 073370R        STA EXCNT      SET INSTRUCTION COUNT
0565   03717 016721R        JSB DBSET
0566   03720 016721R        JSB DBSET
0567   03721 167337R        LDB CURAL,I    GET RELOCATION ADDRESS
0568   03722 077345R        STB DBLAD      SAVE RELOCATION ADDRESS
0569   03723 037417R        ISZ PLFLG      SKIP-FIRST DBL RECORD
0570   03724 027737R        JMP DBL0       IGNORE SUBSEQUENT RECORDS
0571   03725 063417R        LDA L01
0572   03726 002002          SZA
0573   03727 163315R        LDA ID6,I      GET TYPE
0574   03730 010073          AND M177
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0575  03731 050060         CPA .5
0576  03732 002001         RSS              SET NEW MEMORY BOUND FOR SEGMENT
0577  03733 006400         CLB              SET PGMAD=0
0578  03734 077325R HABSS  STB BSSDP        SAVE INITIAL PROG DISPLACEMENT
0579  03735 047414R         ADB LWH4
0580  03736 077331R         STB CBASE        SAVE CURRENT BASE PROGRAM ADDRESS
0581  03737 016721R DBL0    JSB DBSET
0582  03740 167337R DBL1    LDB CURAL,I      GET RELOCATION BYTES
0583  03741 077427R         STB REKEY        SAVE FOR RELOCATION TYPE
0584  03742 060046         LDA N5
0585  03743 073400R         STA INSCN        SET RELOCATION BYTE COUNT
0586  03744 016721R         JSB DBSET
0587  03745 063427R DBL2    LDA REKEY        GET RELOCATION BYTES
0588  03746 001723         ALF,RAR
0589  03747 073427R         STA REKEY        SAVE FOR NEXT INST WORD
0590  03750 010062         AND .7           ISOLATE CURRENT BYTE
0591  03751 050057         CPA .4           EXTERNAL REFERENCE?
0592  03752 026002R         JMP DBL4         YES-GET LINK ADDRESS
0593  03753 050060         CPA .5           MEMORY REFERENCE?
0594  03754 026023R         JMP DBL6         YES-CHECK FOR INDIRECT LINK
0595  03755 050061         CPA .6           SPECIAL REFERENCE?
0596  03756 026127R         JMP BYTE         YES- CHECK FOR BYTE ADDRESS
0597  03757 043600R         ADA RBTAD
0598  03760 160000         LDA A,I          GET RELOCATION BASE
0599  03761 143337R         ADA CURAL,I      ADD CURRENT INSTRUCTION WORD
0600  03762 067345R DBL3    LDB DBLAD        CURRENT RELOCATION BASE
0601  03763 047602R         ADB TPREL        ADD CURRENT PROG RELOCATION BASE
0602  03764 073410R         STA TEMP2        SAVE A-REGISTER
0603  03765 063417R         LDA L01          UNLESS IT'S
0604  03766 002003         SZA,RSS            PASS 3, DON'T
0605  03767 027772R         JMP LD8            OUTPUT TO DISC
0606  03770 063410R         LDA TEMP2        RESTORE A-REGISTER
0607  03771 017705R         JSB LABDO        OUTPUT ABSOLUTE WORD
0608  03772 016721R LD8     JSB DBSET
0609  03773 037370R         ISZ EXCNT        SKIP-LAST INSTRUCTION OUT
0610  03774 002001         RSS              NO-CONTINUE
0611  03775 027240R         JMP CLSRC        YES-CLASSIFY NEXT RECORD
0612  03776 037345R         ISZ DBLAD        INCR DBL RELOCATION ADDRESS
0613  03777 037400R         ISZ INSCN        SKIP IF NEW RELOCATION BYTE
0614  04000 027745R         JMP DBL2         PROCESS NEXT INSTRUCTION
0615  04001 027740R         JMP DBL1         GET NEXT RELOCATION BYTE
0616  04002 163337R DBL4    LDA CURAL,I      GET CURRENT DBL WORD
0617  04003 010074         AND M377
0618  04004 073371R         STA EXORD        ISOLATE AND SAVE ORDINAL
0619  04005 016230R         JSB INLST        INITIALIZE LSTX
0620  04006 016234R DBL5    JSB LSTX         SET LST ADDRESSES
0621  04007 027762R         JMP DBL3         ORDINAL NOT FOUND
0622  04010 163301R         LDA LST3,I       GET WORD3 OF LST ENTRY
0623  04011 010074         AND M377
0624  04012 053371R         CPA EXORD        SAME ORDINAL?
0625  04013 002001         RSS              YES
0626  04014 026006R         JMP DBL5         NO-CONTINUE SEARCH
0627  04015 167303R         LDB LST5,I       GET BP LINK ADDRESS
0628  04016 163337R         LDA CURAL,I      GET CURRENT DBL WORD
0629  04017 013446R         AND M1740        ISOLATE INSTRUCTION CODE
0630  04020 033447R         IOR MSIGN        SET INDIRECT
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0631  04021 030001         IOR B          SET ADDRESS=BP LINK ADDRESS
0632  04022 027762R        JMP DBL3       OUTPUT INSTRUCTION
0633  04023 163337R DBL6   LDA CURAL,I    GET CURRENT DBL WORD
0634  04024 073401R        STA INSTR      SAVE INSTRUCTION CODE
0635  04025 016721R        JSB DBSET      GET ADDR OF NEXT WORD IN LBUF
0636  04026 063401R        LDA INSTR      GET INSTRUCTION CODE
0637  04027 010056         AND .3         MASK RELOCATION INDICATOR
0638  04030 043600R        ADA RBTAD
0639  04031 002004         INA
0640  04032 164000         LDB A,I        GET CURRENT RELOCATION BASE
0641  04033 147337R        ADB CURAL,I    ADD CURRENT INSTR ADDRESS
0642  04034 076126R        STB TMPAD       AND SAVE TEMPORARILY
0643  04035 063401R        LDA INSTR
0644  04036 001323         RAR,RAR
0645  04037 010074         AND M377
0646  04040 002003         SZA,RSS        EXT ORDINAL IN BITS 2-9 ?
0647  04041 026064R        JMP TSTIN       NO- CONTINUE
0648  04042 073371R        STA EXORD       YES- SAVE FOR COMPARE
0649  04043 016230R        JSB INLST      SEARCH FOR EXT
0650  04044 016234R SREXT  JSB LSTX
0651  04045 026124R        JMP UND          (SHOULD FIND IT)
0652  04046 163301R        LDA LST3,I
0653  04047 010074         AND M377
0654  04050 053371R        CPA EXORD      MATCH?
0655  04051 002001         RSS             YES-SKIP
0656  04052 026044R        JMP SREXT       NO- TRY AGAIN
0657  04053 163302R        LDA LST4,I     IS ENTRY DEFINED?
0658  04054 002002         SZA
0659  04055 002020         SSA
0660  04056 026124R        JMP UND          NO - TREAT AS NO EXT
0661  04057 163303R        LDA LST5,I       YES- FIND ABSOLUTE ENT VALUE
0662  04060 043330R        ADA BPOIT
0663  04061 043510R        ADA BPBUF
0664  04062 164000         LDB A,I
0665  04063 046126R        ADB TMPAD              ADD SAVED WORD 2 VALUE
0666  04064 063401R TSTIN  LDA INSTR      GET ORIGINAL WORD 1
0667  04065 013446R        AND M1740
0668  04066 002020         SSA            SKIP IF DIRECT REFERENCE
0669  04067 047447R        ADB MSIGN      SET INDIRECT BIT
0670  04070 002003         SZA,RSS        ADDRESSABLE INSTRUCTION?
0671  04071 026122R        JMP DBL9         NO- SKIP PAGE CHECKING
0672  04072 073401R        STA INSTR      SAVE INSTRUCTION CODE
0673  04073 063602R        LDA TPREL
0674  04074 043345R        ADA DBLAD
0675  04075 013445R        AND M0760      ISOLATE PAGE #
0676  04076 073411R        STA PAGNO      SAVE CURRENT PAGE #
0677  04077 060001         LDA B          GET INSTRUCTION ADDRESS
0678  04100 013445R        AND M0760      ISOLATE PAGE #
0679  04101 053411R        CPA PAGNO      SAME PAGE?
0680  04102 026115R        JMP DBL7       YES-NO INDIRECT ADDRESS NEEDED
0681  04103 077410R        STB OPRND      SAVE INSTRUCTION ADDRESS
0682  04104 016601R        JSB BPSCN      SCAN BASE PAGE FOR SAME OPERAND
0683  04105 016671R LINKC  JSB SETOP      SET OPERAND IN BP LOCATION
0684  04106 070001         STA B          SAVE LINK ADDRESS
0685  04107 013443R        AND O1777      GET PAGE OFFSET
0686  04110 050001         CPA B          CURRENT PAGE?
```

```
0687  04111 002001         RSS              NO- SKIP
0688  04112 033444R        IOR M2000        SET Z/C = 1 (CURRENT)
0689  04113 033447R        IOR MSIGN        SET INDIRECT BIT
0690  04114 026120R        JMP DBL8         GO ADD INSTRUCTION & STORE WORD
0691  04115 060001  DBL7   LDA B            GET OPERAND ADDRESS
0692  04116 013443R        AND O1777
0693  04117 033444R        IOR M2000        SET Z/C=1 (CURRENT)
0694  04120 033401R DBL8   IOR INSTR        ADD INSTRUCTION CODE
0695  04121 027762R        JMP DBL3         OUTPUT INSTRUCTION WORD
0696*
0697  04122 060001  DBL9   LDA B            PUT CONFIGURED I/O INSTR IN "A"
0698  04123 027762R        JMP DBL3         OUTPUT INSTRUCTION
0699*
0700  04124 066126R UND    LDB TMPAD
0701  04125 026064R        JMP TSTIN
0702*
0703  04126 000000  TMPAD  NOP
0704*
0705* R=6    SPECIAL REFERENCE
0706*
0707  04127 163337R BYTE   LDA CURAL,I      IS TYPE = 0? (IE BYTE ADDRESS)
0708  04130 001700         ALF
0709  04131 010066         AND .17
0710  04132 002002         SZA
0711  04133 026147R        JMP NBYT           NO- IGNORE INSTRUCTION
0712*
0713  04134 163337R        LDA CURAL,I      GET RELOCATION INDICATOR
0714  04135 010056         AND .3
0715  04136 043600R        ADA RBTAD
0716  04137 002004         INA
0717  04140 160000         LDA A,I          GET RELOCATION BASE FROM TABLE
0718  04141 001000         ALS               OFFSET TO BYTE ADDRESS BASE
0719  04142 072126R        STA TMPAD         SAVE
0720  04143 016721R        JSB DBSET        POINT TO RELOC BYTE ADDRESS
0721  04144 163337R        LDA CURAL,I      COMPUTE TOTAL BYTE ADDRESS
0722  04145 042126R        ADA TMPAD          (BASE + OFFSET)
0723  04146 027762R        JMP DBL3         OUTPUT INSTRUCTION WORD
0724*
0725  04147 016721R NBYT   JSB DBSET        BUMP TO 2ND WORD
0726  04150 027772R        JMP LD8          IGNORE INSTRUCTION
```

```
0728*      DEBUG CHECKS IF CURRENT PROGRAM LOADED WAS DEBUG.
0729*   THE PRIMARY ENTRY POINT OF DEBUG IS SET INTO PRENT, AND THE
0730*   ADDRESS OF DEBUG IS SET TO BE INDIRECT.
0731*   THE PROGRAM PRIMARY ENTRY POINT IS SET INTO DEBUF
0732  04151 000000  DEBUG NOP
0733  04152 063463R       LDA ZBUF       CHECK IF
0734  04153 053461R       CPA CHRDE          -DEBUG- PROGRAM
0735  04154 002001        RSS
0736  04155 126151R       JMP DEBUG,I   NO-RETURN
0737  04156 063464R       LDA ZBUF+1
0738  04157 053462R       CPA CHRDE+1
0739  04160 002001        RSS
0740  04161 126151R       JMP DEBUG,I    NO-RETURN
0001  04162 063465R       LDA ZBUF+2
0002  04163 053463R       CPA CHRDE+2
0003  04164 002001        RSS
0004  04165 126151R       JMP DEBUG,I   NO-RETURN
0005  04166 016230R       JSB INLST
0006  04167 016234R DSCAN JSB LSTX      FIND -DEBUG- ENTRY IN LST FOR
0007  04170 026637R       JMP RCERR
0008  04171 163277R       LDA LST1,I
0009  04172 053461R       CPA CHRDE
0010  04173 002001        RSS
0011  04174 026167R       JMP DSCAN
0012  04175 163300R       LDA LST2,I
0013  04176 053462R       CPA CHRDE+1
0014  04177 002001        RSS
0015  04200 026167R       JMP DSCAN
0016  04201 163301R       LDA LST3,I
0017  04202 010075        AND M1774
0018  04203 053463R       CPA CHRDE+2
0019  04204 002001        RSS
0020  04205 026167R       JMP DSCAN
0021  04206 037346R       ISZ DBUGF
0022  04207 163302R       LDA LST4,I    GET ENT FOR DEBUG
0023  04210 002020        SSA
0024  04211 026637R       JMP RCERR
0025  04212 167303R       LDB LST5,I     GET BP LINK ADDR OF -DEBUG-
0026  04213 047330R       ADB BPOIT
0027  04214 047510R       ADB BPBUF
0028  04215 077443R       STB TEMP      SAVE BASE PAGE LINK ADDRESS
0029  04216 164001        LDB B,I
0030  04217 063423R       LDA PRENT
0031  04220 017705R       JSB LABDO
0032  04221 163443R       LDA TEMP,I
0033  04222 033447R       IOR MSIGN
0034  04223 173443R       STA TEMP,I
0035  04224 163337R       LDA CURAL,I
0036  04225 043602R       ADA TPREL
0037  04226 073423R       STA PRENT
0038  04227 126151R       JMP DEBUG,I
```

```
0040*     INLST SETS THE ADDRESS OF THE FIRST ENTRY IN LST IN TLST
0041*         CALLING SEQUENCE
0042*               JSB INLST
0043  04230 000000  INLST NOP
0044  04231 063274R       LDA BLST
0045  04232 073275R       STA TLST
0046  04233 126230R       JMP INLST,I
0047*
0048*     LSTX SETS THE CURRENT LST ADDR INTO LST 1-5
0049*         CALLING SEQUENCE
0050*               JSB LSTX
0051*         RETURN
0052*               (P+1) IF AT END OF LST
0053*               (P+2) IF NOT AT END OF LST
0054*
0055  04234 000000  LSTX  NOP
0056  04235 063275R       LDA TLST      CHECK IF AT END OF LOADER SYMBOL
0057  04236 053276R       CPA PLST           TABLE LIST
0058  04237 002001        RSS
0059  04240 036234R       ISZ LSTX           YES, SO INCR TO DONE EXIT
0060  04241 073277R       STA LST1      SET LOADER SYMBOL TABLE ADDRESS
0061  04242 002004        INA
0062  04243 073300R       STA LST2
0063  04244 002004        INA
0064  04245 073301R       STA LST3
0065  04246 002004        INA
0066  04247 073302R       STA LST4
0067  04250 002004        INA
0068  04251 073303R       STA LST5
0069  04252 002004        INA
0070  04253 073275R       STA TLST
0071  04254 003004        CMA,INA       CHECK IF IDENT AND LST TABLES
0072  04255 043306R       ADA PIDNT          OVERLAP
0073  04256 002021        SSA,RSS
0074  04257 126234R       JMP LSTX,I    RETURN
0075  04260 026627R       JMP LOVER     SYMBOL TABLE OVERFLOW
0076*
0077*     INIDX SETS THE ADDRESS OF THE FIRST ENTRY IN THE PROGRAM
0078*  IDENT TABLE AS THE CURRENT ADDRESS.
0079*         CALLING SEQUENCE
0080*               JSB INIDX
0081  04261 000000  INIDX NOP
0082  04262 063304R       LDA BIDNT
0083  04263 073305R       STA TIDNT
0084  04264 126261R       JMP INIDX,I
0085*     IDX SETS THE ADDRESSES OF THE CURRENT 6 WORD ENTRY IN THE
0086*  IDENT TABLE FROM THE ADDRESS OF THE CURRENT ENTRY
0087*         CALLING SEQUENCE :
0088*               JSB IDX
0089*         RETURN:
0090*               (P+1) IF AT END OF IDENT TABLE
0091*               (P+2) IF NOT AT END OF IDENT TABLE
0092  04265 000000  IDX   NOP
0093  04266 063305R       LDA TIDNT
0094  04267 053306R       CPA PIDNT
0095  04270 002001        RSS
```

```
0096  04271 036265R        ISZ IDX
0097  04272 073310R        STA ID1
0098  04273 002004         INA
0099  04274 073311R        STA ID2
0100  04275 002004         INA
0101  04276 073312R        STA ID3
0102  04277 002004         INA
0103  04300 073313R        STA ID4
0104  04301 002004         INA
0105  04302 073314R        STA ID5
0106  04303 002004         INA
0107  04304 073315R        STA ID6
0108  04305 002004         INA
0109  04306 073316R        STA ID7
0110  04307 063305R        LDA TIDNT
0111  04310 067305R        LDB TIDNT
0112  04311 003004         CMA,INA
0113  04312 043276R        ADA PLST
0114  04313 002021         SSA,RSS
0115  04314 026320R        JMP *+4
0116  04315 044044         ADB N7
0117  04316 077305R        STB TIDNT
0118  04317 126265R        JMP IDX,I
0119  04320 063403R        LDA LDING     CHECK-PROGRAM LOADING FLAG
0120  04321 002002         SZA
0121  04322 026326R        JMP *+4
0122  04323 063500R        LDA ERR11
0123  04324 016344R        JSB ERROR
0124  04325 026631R        JMP ABORT
0125  04326 003400         CCA           LOADING SO RETURN TO P+1
0126  04327 042265R        ADA IDX            FOR PROGRAM PROCESSING
0127  04330 124000         JMP A,I
```

```
0129*     SYOUT PRINTS MESSAGE ON SYSTEM TELETYPE, THESE INCLUDE ALL
0130*  ERROR DIAGNOSTICS AND OPERATOR ACTION MESSAGES.
0131*          CALL SEQUENCE:
0132*               LDA  <# CHARACTERS IN MESSAGE (+)>
0133*               LDB  <MESSAGE ADDRESS>
0134*               JSB  SYOUT
0135  04331 000000  SYOUT NOP
0136  04332 076341R        STB SYM
0137  04333 003004         CMA,INA
0138  04334 073446R        STA TTYNO
0139  04335 016001X        JSB EXEC
0140  04336 004343R        DEF *+5
0141  04337 000055         DEF .2
0142  04340 000054         DEF .1
0143  04341 004341R SYM    DEF *
0144  04342 011446R        DEF TTYNO
0145  04343 126331R        JMP SYOUT,I   RETURN
0146*     ERROR OUTPUTS ERROR CODE TO SYSTEM TELETYPE
0147*          CALLING SEQUENCE:
0148*               LDA <2 DIGIT ASCII ERROR CODE>
0149*               JSB ERROR
0150  04344 000000  ERROR NOP
0151  04345 072354R        STA MESSE+2
0152  04346 060057         LDA .4
0153  04347 066352R        LDB MESSE
0154  04350 016331R        JSB SYOUT
0155  04351 126344R        JMP ERROR,I
0156  04352 004353R MESSE  DEF *+1
0157  04353 046040         ASC 2,L
0158*     SPACE SINGLE SPACES THE LIST OUTPUT DEVICE
0159*          CALLING SEQUENCE:
0160*               JSB SPACE
0161*
0162  04355 000000  SPACE NOP
0163  04356 002404         CLA,INA
0164  04357 066362R        LDB ANEW
0165  04360 016364R        JSB DRKEY
0166  04361 126355R        JMP SPACE,I
0167  04362 004363R ANEW   DEF *+1
0168  04363 020040         ASC 1,
0169*     DRKEY PRINTS A MESSAGE ON THE LIST OUTPUT DEVICE
0170*          CALLING SEQUENCE:
0171*               LDA <# CHARACTERS (POSITIVE)>
0172*               LDB <ADDRESS OF MESSAGE>
0173*               JSB DRKEY
0174  04364 000000  DRKEY NOP
0175  04365 003004         CMA,INA
0176  04366 073443R        STA TEMP
0177  04367 076374R        STB *+5
0178  04370 016001X        JSB EXEC      WRITE ON LIST DEVICE
0179  04371 004376R        DEF *+5
0180  04372 000055         DEF .2
0181  04373 011462R        DEF LISTU
0182  04374 004374R        DEF *
0183  04375 011443R        DEF TEMP
0184  04376 126364R        JMP DRKEY,I
```

```
0186*     DDOUT WRITES THE CONTENTS OF DBUF ON THE DISC AT THE CURRENT
0187*   DISC SECTOR, FOLLOWING THIS, DBUF IS CLEARED, AND THE CURRENT
0188*   ADDRESS AND COUNT FOR DBUF ARE SET AND THE NEXT DISC ADDRESS IS
0189*   SET INTO DSKAD
0190  04377 000000  DDOUT NOP
0191*
0192  04400 062773R       LDA AABUF      IF ABFLG=0, OUTPUT IS FROM
0193  04401 066750R       LDB ABFLG      BUFFER A,  SET ABFLG # 0 SO
0194  04402 006002        SZB            NEXT OUTPUT WILL BE FROM
0195  04403 062774R       LDA ABBUF      BUFFER B,  SET CURAD SO
0196  04404 072442R       STA EBUF       BUFFER B WILL BE FILLED NEXT
0197  04405 006002        SZB           IF ABFLG#0, OUTUT IS FROM
0198  04406 002400        CLA            BUFFER B,  SET ABFLG = 0 SO
0199  04407 072750R       STA ABFLG      NEXT OUTPUT WILL BE FROM
0200  04410 062774R       LDA ABBUF      BUFFER A,  SET CURAD SO
0201  04411 006002        SZB            BUFFER A WILL BE FILLED
0202  04412 062773R       LDA AABUF      NEXT,
0203  04413 073335R       STA CURAD
0204*
0205  04414 063353R       LDA DSKAD     BREAK DOWN DISC ADDR INTO TRACK
0206  04415 017427R       JSB GTS        SECTOR FOR EXEC WRITE
0207*
0208  04416 063353R       LDA DSKAD     INCREMENT DISC ADDRESS
0209  04417 016451R       JSB DISKA      FOR NEXT TIME
0210  04420 073353R       STA DSKAD
0211*
0212  04421 063546R       LDA N128      INITIALIZE BUFFER COUNT
0213  04422 073347R       STA DCNT       TO -128
0214*
0215  04423 062450R       LDA FIRST     IS THIS THE 1ST TIME THROUGH?
0216  04424 002002        SZA
0217  04425 026432R       JMP NFRST
0218  04426 060055        LDA .2        YES - SET DISC LU = 2 FOR
0219  04427 072745R       STA DLU         SYSTEM DISC
0220  04430 072450R       STA FIRST       SETFOR NOT 1ST TIME
0221  04431 026434R       JMP CL         BYPASS WAIT
0222*
0223  04432 017412R NFRST JSB WAIT       WAIT FOR CURRENT OPERATION
0224  04433 037366R       ISZ DSCNT     INCREMENT # SECTORS OUTPUT
0225*
0226  04434 067335R CL    LDB CURAD     CLEAR NEXT BUFFER TO BE
0227  04435 016516R       JSB BUFCL      FILLED
0228*
0229  04436 016001X       JSB EXEC      WRITE RELOCATABLE RECORD
0230  04437 004446R       DEF *+7
0231  04440 000051        DEF N2         ONTO SYSTEM SCRATCH
0232  04441 004447R       DEF WCMND      AREA - WITHOUT WAIT
0233  04442 000000  EBUF  NOP           (FILLED FROM ABOVE)
0234  04443 307547R       DEF .128
0235  04444 005441R       DEF TR
0236  04445 005440R       DEF SECT
0237*
0238  04446 126377R       JMP DDOUT,I
0239*
0240  04447 020002  WCMND OCT 20002     WRITE WITHOUT AIT COMMAND
0241  04450 000000  FIRST NOP
```

```
0242*     DISKA INCREMENTS THE CURRENT DISC ADDRESS TO
0243*   PROVIDE THE ADDRESS OF THE SUCCEEDING SECTOR.
0244*   CALLING SEQUENCE:
0245*         LDA <CURRENT DISC ADDRESS>
0246*         JSB DISKA
0247*   RETURN:
0248*         A CONTAINS NEXT DISC ADDRESS
0249  04451 000000  DISKA NOP
0250  04452 002004        INA
0251  04453 070001        STA B
0252  04454 010074        AND M377
0253  04455 050116        CPA SECTR     CHECK IF LAST SECTOR ON TRACK
0254  04456 026461R       JMP *+3       INCR TRACK #
0255  04457 060001        LDA B
0256  04460 126451R       JMP DISKA,I   RETURN
0257  04461 060001        LDA B
0258  04462 010075        AND M1774
0259  04463 043543R       ADA M400      INCR TRACK #
0260  04464 126451R       JMP DISKA,I   RETURN
0261*
0262*     DISKI READS A SECTOR OF DATA INTO CORE FROM DISC
0263*   CALLING SEQUENCE:
0264*         LDA <DISC T/S ADDRESS>
0265*         LDB <CORE ADDRESS>
0266*         JSB DISKI
0267*
0268  04465 000000  DISKI NOP
0269  04466 076507R       STB COREA     SAVE CORE BUFF ADDR IN EXEC CALL
0270  04467 017427R       JSB GTS       GET TRACK/SECTOR OF DISC ADDR
0271  04470 003400        CCA           SET FOR READ
0272  04471 016501R       JSB I.O       PERFORM I/O
0273  04472 126465R       JMP DISKI,I   RETURN
0274*
0275*     DISKO WRITES A SECTOR OF DATA ONTO DISC FROM CORE
0276*   CALLING SEQUENCE:
0277*         LDA <DISC ADDRESS>
0278*         LDB <CORE ADDRESS>
0279*         JSB DISKO
0280*
0281  04473 000000  DISKO NOP
0282  04474 076507R       STB COREA     SAVE CORE BUFF ADDR IN EXEC CALL
0283  04475 017427R       JSB GTS       GET TRACK/SECTOR OF DISC ADDR
0284  04476 060051        LDA N2        SET FOR WRITE
0285  04477 016501R       JSB I.O       PERFORM I.O
0286  04500 126473R       JMP DISKO,I   RETURN
0287*
0288  04501 000000  I.O    NOP
0289  04502 072514R       STA RQ        SAVE REQUEST CODE
0290*
0291  04503 016001X       JSB EXEC      EXEC CALL FOR DISC I/O
0292  04504 004513R       DEF *+7
0293  04505 004514R       DEF RQ
0294  04506 011351R       DEF DISCX
0295  04507 000000  COREA  NOP
0296  04510 004515R       DEF #WRDS
0297  04511 005441R       DEF TR
```

```
0298  04512 005440R        DEF SECT
0299  04513 126501R        JMP I,0,I
0300*
0301  04514 000000  RQ     NOP             REQUEST CODE"READ=-1; WRITE=-2
0302  04515 000200  #WRDS  DEC 128         MAY BE CHANGED BY BLOCK ROUTINE
0303*
0304*       BUFCL CLEARS A 128 WORD BUFFER WITH ZEROS
0305*    CALLING SEQUENCE:
0306*           LDB <BUFFER ADDRESS>
0307*           JSB BUFCL
0308*
0309  04516 000000  BUFCL  NOP
0310  04517 063546R        LDA N128
0311  04520 073453R        STA WDCNT       SET CLEAR WORD COUNT
0312  04521 002400         CLA
0313  04522 170001         STA B,I         CLEAR 1 WORD OF BUFFER
0314  04523 006004         INB
0315  04524 037453R        ISZ WDCNT       ALL WORDS CLEARED
0316  04525 026522R        JMP *-3         NO, SO GO CLEAR NEXT WORD
0317  04526 126516R        JMP BUFCL,I     YES, SO RETURN
0318*
0319*      CLID3 CLEARS USEAGE FLAGS TO INSURE THAT PROGRAMS WILL BE
0320*   RELOADED AGAIN IF CALLED MORE THAN ONEE. THIS IS ESSENTIAL FOR
0321*   ALL LIBRARY AND USER SUBROUTINES. USER MAIN PROGRAMS HOWEVER
0322*   MUST NOT BE CLEARED. BOTH THE ESEAGE FLAG IN THE IDENT ENTRY
0323*   AND THE BP LINK ADDRESS FOR ALL ENTRY POINTS IN THE PROGRAM ARE
0324*   CLEARED.
0325*
0326  04527 000000  CLID3  NOP
0327  04530 060060         LDA ,5
0328  04531 067563R        LDB PLAD        GET ADDRESS OF PROGRMM LIST
0329  04532 053424R        CPA PTYPE       PROG # SEGMENT?
0330  04533 067421R        LDB PLMAN       YES-GET MAIN PROG LIST ADDRESS
0331  04534 077340R        STB CURAP       SET CURRENT PROG LIST ADDRESS
0332  04535 007004         CMB,INB
0333  04536 047563R        ADB PLAD        ADD PROGRAM LIST ADDRESS
0334  04537 047547R        ADB ,128         ADJUST FOR PROG LIST LENGTH
0335  04540 007000         CMB
0336  04541 077416R        STB PLCNT       SET CURRENT PROG LIST COUNT
0337  04542 163340R  TRID3  LDA CURAP,I     GET CURRENT PROG LIST ENTRY
0338  04543 002003         SZA,RSS         SKIP-NOT ENT OF PROGLIST
0339  04544 126527R        JMP CLID3,I     RETURN-DONE
0340  04545 037340R        ISZ CURAP       INCR CURRENT PROG LIST ADDR
0341  04546 037416R        ISZ PLCNT       SKIP-END OF PROG LIST
0342  04547 002001         RSS
0343  04550 126527R        JMP CLID3,I     RETURN-DONE
0344  04551 073305R        STA TIDNT       SET CURRENT IDENT ADDR
0345  04552 016265R        JSB IDX         SET IDENT ADDRESSES
0346  04553 026637R        JMP RCERR
0347  04554 163315R        LDA ID6,I       GET M/S , TYPE
0348  04555 002021         SSA,RSS
0349  04556 026565R        JMP TRID5        CLEAR IF NO TRANSFER ADDRESS
0350  04557 010073         AND M177         IF TRANSFER ADDRESS, CHECK
0351  04560 050061         CPA ,6             TO  SEE IF TYPE INDICATES
0352  04561 002001         RSS                SUBROUTINE (6 OR 1)
0353  04562 050062         CPA ,7              YES- CLEAR ID3
```

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0354  04563 002001         RSS
0355  04564 026542R         JMP TRID3          NO - IGNORE
0356  04565 163312R TRID5   LDA ID3,I
0357  04566 010075          AND M1774
0358  04567 173312R         STA ID3,I
0359  04570 016230R         JSB INLST      INITIALIZE LSTX
0360  04571 016234R CLSUT   JSB LSTX       SET CURRENT LST ADDRESSES
0361  04572 026542R         JMP TRID3      TRY NEXT IDENT
0362  04573 163302R         LDA LST4,I     SET IDENT ADDRESS
0363  04574 053310R         CPA ID1        ENT/EXT BELONGS TO CURRENT PROG
0364  04575 006401          CLB,RSS        YES
0365  04576 026571R         JMP CLSUT      TRY NEXT LST ENTRY
0366  04577 177303R         STB LST5,I     CLEAR BP LINK ADDRESS
0367  04600 026571R         JMP CLSUT      TRY NEXT LST ENTRY
0368*
0369*      BPSCN SCANS LOADER BP AREA FOR A VALUE EQUAL TO THE CURRENT
0370*   OPERAND, IF A VALLUE IS FOUND, THE ADDRESS OF THE OPERAND IS
0371*   RETURNED IN THE A REGISTER, OTHERWISE A NEW BP LINK WORD IS
0372*   RESERVED AND THE ADDRESSS OF THIS WORD IS RETURNED IN A.
0373*
0374  04601 000000  BPSCN NOP
0375  04602 063455R         LDA UBFWA      LOW BASE PAGE ADDRESS
0376  04603 073404R         STA LOWER      SAVE LOWER BOUND
0377  04604 067440R         LDB TBREL      HIGH BASE PAGE ADDRESS
0378  04605 007004          CMB,INB
0379  04606 077450R         STB UPPER      SAVE NEG UPPER BOUND
0380  04607 063404R BPSRC   LDA LOWER      GET CURRENT LOW BP BOUND
0381  04610 043450R         ADA UPPER      TEST FOR END OF AREA
0382  04611 002021          SSA,RSS        NOT END OF AREA
0383  04612 026625R         JMP BPALC      GO TO ALLOCATE LOCATION
0384  04613 067410R         LDB OPRND      GET OPERAND
0385  04614 063404R         LDA LOWER
0386  04615 043330R         ADA BPOIT
0387  04616 043510R         ADA BPBUF      ADJUST FOR START OF BP BUFFER
0388  04617 037404R         ISZ LOWER      INCR LOWER BOUND
0389  04620 154000          CPB A,I        CHECK IF OPERANDS SAME
0390  04621 002001          RSS
0391  04622 026607R         JMP BPSRC      NO-TRY NEXT VALUE
0392  04623 043406R         ADA NBPBF      READJUST FOR BP BUFFER ADDR
0393  04624 126601R         JMP BPSCN,I    RETURN WITH ADDR IN A
0394  04625 017251R BPALC   JSB DLINK       GO CHECK FOR CURRENT PAGE LINK
0395  04626 016702R         JSB ALLOC       ALLOCATE NEW BP LINK ADDRESS
0396  04627 126601R         JMP BPSCN,I    RETURN WITH ADDR IN A
0397*
0398*      LSTEX LISTS THE UNDEFINED EXTERNAL REFERENCES
0399*          CALLING SEQUENCE:
0400*               JSB LSTEX
0401*
0402  04630 000000  LSTEX NOP
0403  04631 002400          CLA
0404  04632 073370R         STA EXCNT      CLEAR UNDEFINED EXT COUNT
0405  04633 016230R         JSB INLST
0406  04634 016234R LST10   JSB LSTX
0407  04635 026654R         JMP LST20       DONE LISTING UNDEFINED EXT
0408  04636 163302R         LDA LST4,I
0409  04637 002021          SSA,RSS
```

```
0410  04640 026634R        JMP LST10          NOT UNDEFINED, SO GET NEXT
0411  04641 063370R        LDA EXCNT     CHECK IF UNDEFINED EXT HEADING
0412  04642 002002        SZA                PUT OUT
0413  04643 026647R        JMP *+4       YES
0414  04644 063433R        LDA .14       NO
0415  04645 066661R        LDB MESUX
0416  04646 016331R        JSB SYOUT     OUTPUT HEADING
0417  04647 060060        LDA .5
0418  04650 067277R        LDB LST1
0419  04651 016331R        JSB SYOUT
0420  04652 037370R        ISZ EXCNT     INCR UNDEFINED EXT COUNT
0421  04653 026634R        JMP LST10      GET NEXT LST
0422  04654 063370R LST20 LDA EXCNT     CHECK IF ANY UNDEFINED EXTERNALS
0423  04655 002002        SZA           SKIP=NO
0424  04656 126630R        JMP LSTEX,I   RETURN TO P+1 =UNDEFINED EXTERNAL
0425  04657 036630R        ISZ LSTEX     INCR RETURN ADDRESS
0426  04660 126630R        JMP LSTEX,I   RETURN TO P+2
0427  04661 004662R MESUX DEF *+1
0428  04662 052516        ASC 7,UNDEFINED EXTS
0429*
0430*     SETOP SETS CURRENT OPERAND IN TH BP LOCATION SPECIFIED
0431*  BY TH  ADDRESS IN A
0432*
0433  04671 000000  SETOP NOP
0434  04672 072701R        STA BPADD
0435  04673 043330R        ADA BPOIT
0436  04674 043510R        ADA BPBUF     ADJUST BP LINK ADDRESS
0437  04675 067410R        LDB OPRND     GET AND STORE OPERAND
0438  04676 174000        STB A,I       INTO BP LOCATION
0439  04677 062701R        LDA BPADD
0440  04700 126671R        JMP SETOP,I   RETURN
0441  04701 000000  BPADD NOP
0442*
0443*     ALLOC ESTABLISHES ALL THE BASE PAGE LINKAGE ADDRESSES,
0444*  DIAGNOSTIC IS OUTPUT IF OUT OF SPACE.
0445*
0446  04702 000000  ALLOC NOP
0447  04703 063440R        LDA TBREL     GET NEXT BP ADDRESS
0448  04704 043330R        ADA BPOIT
0449  04705 043510R        ADA BPBUF     ADJUST BP ADDRESS
0450  04706 006400        CLB
0451  04707 174000        STB A,I       CLEAR ALLOCATED BP LOCATION
0452  04710 063440R        LDA TBREL
0453  04711 037440R        ISZ TBREL     INCR NEXT BP ADDRESS
0454  04712 064000        LDB A         CHECK IF BASE PAGE OVERFLOW
0455  04713 007000        CMB
0456  04714 047456R        ADB UBLWA
0457  04715 006021        SSB,RSS
0458  04716 126702R        JMP ALLOC,I
0459  04717 063471R        LDA ERR04     BP LINK OVERFLOW ERROR
0460  04720 026630R        JMP ABRTX      ABORT LOADR
0461*
0462*     DBSET GIVES THE ADDRESS OF THE NEXT WORD OF THE RELOCATABLE
0463*  RECORD IN LBUF. IF AT END OF BUFFER, IT READS IN ANOTHER PACKED
0464*  RELOCATABLE RECORD
0465*
```

```
0466   04721 000000  DBSET NOP
0467   04722 037337R        ISZ CURAL     INCR CURRENT LBUF ADDRESS
0468   04723 037402R        ISZ LCNT      SKIP-END OF LBUF
0469   04724 126721R        JMP DBSET,I   RETURN
0470   04725 017375R        JSB INREL      READ NEXT RELOCAABLE RECORD
0471   04726 126721R        JMP DBSET,I   RETURN
```

```
0473*
0474*  INPUT NAM RECORD FROM DISC
0475*
0476  04727 000000  INNAM NOP
0477  04730 073360R       STA DSKRD     SAVE ORIGINAL DISC ADDRESS
0478*
0479  04731 063351R       LDA DISCX
0480  04732 072745R       STA DLU        DEPENDING ON DISCX
0481*
0482  04733 032746R       IOR WOWC      SET UP READ COMMAND
0483  04734 072747R       STA CMND       WITHOUT WAIT
0484*
0485  04735 002400        CLA           CLEAR # SECTORS
0486  04736 073366R       STA DSCNT       READ
0487  04737 072750R       STA ABFLG     SET FOR BUFFER A
0488*
0489  04740 063360R       LDA DSKRD     BREAK DOWN DISC ADDRESS FOR
0490  04741 017427R       JSB GTS         READ
0491*
0492  04742 016751R       JSB DRWOW     ISSUE READ WITHOUT WAIT FOR BU A
0493*
0494  04743 017375R       JSB INREL     SET FOR B, WAIT FOR A, REQUEST B
0495*
0496  04744 126727R       JMP INNAM,I
0497*
0498  04745 000000  DLU   NOP           DISC OGICAL UNIT #
0499  04746 020000  WOWC  OCT 20000     WITHOUT WAIT
0500  04747 000000  CMND  NOP
0501  04750 000000  ABFLG NOP           A/B BUFFER FLAG



0503*
0504*  DISK READ WITHOUT WAIT
0505*
0506  04751 000000  DRWOW NOP
0507*
0508  04752 062773R       LDA AABUF     IF ABFLG=0, SET FOR INPUT
0509  04753 066750R       LDB ABFLG      INTO ABUFF THEN SET
0510  04754 006002        SZB            ABFLG#0.
0511  04755 062774R       LDA ABBUF     IF ABFLG#0, SET FOR INPUT
0512  04756 072766R       STA CBUF       INTO BBUF, THEN SET
0513  04757 006002        SZB            ABFLG=0.
0514  04760 002400        CLA
0515  04761 072750R       STA ABFLG
0516*
0517  04762 016001X       JSB EXEC
0518  04763 004772R       DEF *+7
0519  04764 000052        DEF N1
0520  04765 004747R       DEF CMND
0521  04766 000000  CBUF  NOP           SET FROM ABFLG
0522  04767 007547R       DEF .128
0523  04770 005441R       DEF TR
0524  04771 005440R       DEF SECT
0525*
0526  04772 126751R       JMP DRWOW,I
```

```
0527*
0528  04773 004775R AABUF DEF ABUF
0529  04774 005175R ABBUF DEF BBUF
0530  04775 000000  ABUF  BSS 128
0531  05175 000000  BBUF  BSS 128



0533*
0534*  INPUT RELOCATABLE RECORD
0535*
0536  05375 000000  INREL NOP
0537*
0538  05376 063360R       LDA DSKRD     INCREMENT DISC
0539  05377 017442R       JSB NDA       COMPUTE NEXT DISC ADDRESS
0540  05400 073360R       STA DSKRD     BREAK INTO TRACK/SECTOR
0541  05401 017427R       JSB GTS
0542*
0543  05402 017412R       JSB WAIT
0544*
0545  05403 062766R       LDA CBUF      INITIALIZE RELOCATABLE INPUT
0546  05404 073337R       STA CURAL       BUFFER POINTERS
0547  05405 063546R       LDA N128
0548  05406 073402R       STA LCNT
0549*
0550  05407 037366R       ISZ DSCNT     INCREMENT # SECTOR READ
0551*
0552  05410 016751R       JSB DRWOW     INITIATE NEXT READ
0553*
0554  05411 127375R       JMP INREL,I



0556*
0557*  WAIT FOR CURRENT DISC TRANSFER TO COMPLTE
0558*
0559  05412 000000  WAIT  NOP
0560*
0561  05413 016001X       JSB EXEC
0562  05414 005421R       DEF *+5
0563  05415 005424R       DEF N13       STATUS REQUEST
0564  05416 004745R       DEF DLU       LOGICAL UNIT SPECIFIED AT NAM
0565  05417 005425R       DEF STAT
0566  05420 005426R       DEF TLOG
0567*
0568  05421 002020        SSA           IF BUSY,
0569  05422 027413R       JMP WAIT+1      LOOP
0570*
0571  05423 127412R       JMP WAIT,I
0572*
0573  05424 177763  N13   DEC -13
0574  05425 000000  STAT  NOP
0575  05426 000000  TLOG  NOP
```

```
0577*
0578*  GET TRACK/SECTOR FROM CURRENT DISC ADDRESS
0579*
0580  05427 000000  GTS   NOP
0581*
0582  05430 070001        STA B          SAVE CURRENT DISC ADDRESS
0583  05431 010074        AND M377
0584  05432 073440R       STA SECT       SECTOR # IN LOW 8 BITS
0585  05433 060001        LDA B
0586  05434 001727        ALF,ALF
0587  05435 010074        AND M377
0588  05436 073441R       STA TR         TRACK # IN UPPER 8 BITS
0589*
0590  05437 127427R       JMP GTS,I
0591*
0592  05440 000000  SECT  NOP            CURRENT DISC SECTOR #
0593  05441 000000  TR    NOP            CURRENT DISC TRACK #



0595*
0596*  NEXT DISC ADDRESS
0597*
0598  05442 000000  NDA   NOP
0599*
0600  05443 016451R       JSB DISKA        ADDRESS NORMALLY
0601*
0602  05444 067442R       LDB TDIR       IF FORWARD INCREMNT,
0603  05445 006003        SZB,RSS          NEW DISC ADDRESS IS
0604  05446 127442R       JMP NDA,I        IN "A"
0605*
0606  05447 070001        STA B          IF BACKWARD INCREMENT,
0607  05450 010074        AND M377         FIRST CHECK TO SEE
0608  05451 002002        SZA              IF NEW TRACK
0609  05452 027456R       JMP NDA2          NO- VALUE IN B IS OK
0610*
0611  05453 005727        BLF,BLF             YES- DECREMENT BACK 2
0612  05454 044051        ADB N2                 TRACKS
0613  05455 005727        BLF,BLF             ROTATE TO HIGH 8 BITS
0614*
0615  05456 060001  NDA2  LDA B          UPDATE NW
0616*
0617  05457 127442R       JMP NDA,I
```

```
0619*
0620*     GENID GENERATEES THE DIRECTORY ENTRY FOR THE PROGRAM LOADED.
0621*
0622  05460 000000  GENID NOP
0623  05461 003400        CCA
0624  05462 073417R       STA PLFLG
0625  05463 063377R       LDA IMAIN     SET ADDRESS FOR IDX
0626  05464 073305R       STA TIDNT
0627  05465 016265R       JSB IDX
0628  05466 026637R       JMP RCERR
0629  05467 163310R       LDA ID1,I
0630  05470 017661R       JSB OUTID     NAME 1,2 TO DIRECTORY
0631  05471 163311R       LDA ID2,I
0632  05472 017661R       JSB OUTID     NAME 3,4 TO DIRECTORY
0633  05473 163315R       LDA ID6,I     GET TYPE
0634  05474 010073        AND M177
0635  05475 067461R       LDB DVR        LOADING DRIVERS?
0636  05476 054057        CPB .4
0637  05477 060057        LDA .4           YES - RESET TO TYPE 4
0638  05500 033541R       IOR M200      SET -P- BIT
0639  05501 070001        STA B
0640  05502 163312R       LDA ID3,I     NAME 5
0641  05503 010075        AND M1774
0642  05504 030001        IOR B
0643  05505 017661R       JSB OUTID     NAME 5,P,TYPE TO DIRECTORY
0644  05506 063357R       LDA DSKMN
0645  05507 017661R       JSB OUTID     MAIN DISC ADDR TO DIRECTORY
0646  05510 063422R       LDA PPREL
0647  05511 067424R       LDB PTYPE
0648  05512 054060        CPB .5
0649  05513 063324R       LDA BSPAD
0650  05514 043325R       ADA BSSDP
0651  05515 072210R       STA TBUF
0652  05516 003004        CMA,INA
0653  05517 043602R       ADA TPREL
0654  05520 043437R       ADA .127
0655  05521 013544R       AND M7600
0656  05522 001727        ALF,ALF
0657  05523 001200        RAL
0658  05524 072211R       STA TBUF+1    MAIN # OF SECTORS
0659  05525 063412R       LDA PBREL
0660  05526 054060        CPB .5
0661  05527 063323R       LDA BSBAD
0662  05530 072212R       STA TBUF+2    LOW BASE
0663  05531 003004        CMA,INA
0664  05532 043440R       ADA TBREL
0665  05533 043437R       ADA .127
0666  05534 013544R       AND M7600
0667  05535 001727        ALF,ALF
0668  05536 001200        RAL
0669  05537 042211R       ADA TBUF+1    TOTAL # OF SECTORS
0670  05540 017661R       JSB OUTID     NUMBER OF SECTORS TO DIRECTORY
0671  05541 062210R       LDA TBUF
0672  05542 017661R       JSB OUTID     LOW MAIN ADDR TO DIRECTORY
0673  05543 063602R       LDA TPREL
0674  05544 017661R       JSB OUTID     HIGH MAIN ADDR TO DIRECTORY
```

```
0675  05545 062212R        LDA TBUF+2
0676  05546 017661R        JSB OUTID     LOW BASE ADDRESS TO DIRECTORY
0677  05547 063440R        LDA TBREL
0678  05550 017661R        JSB OUTID     HIGH BASE ADDR TO DIRECTORY
0679*
0680  05551 067461R        LDB DVR        IF LOADING I/O DRIVERS, FIND
0681  05552 054057         CPB .4           I.XX AND C.XX ENTRY POINTS
0682  05553 027603R        JMP DVRAD        FOR DIRECTORY ENTRY
0683*
0684  05554 063423R        LDA PRENT
0685  05555 017661R        JSB OUTID     PRIMARY ENTRY ADDRESS TO DIRECT
0686  05556 063602R        LDA TPREL
0687  05557 017661R        JSB OUTID     LAST WORD ADDRESS TO DIRECTORY
0688  05560 067374R DVRTN  LDB ICNT       CHECK IF BEGINNING OF NEW SECTOR
0689  05561 057546R        CPB N128
0690  05562 127460R        JMP GENID,I   NEW SECTOR BEGUN RETURN
0691  05563 063374R        LDA ICNT      CHECK IF ROOM FOR ANOTHER
0692  05564 040065         ADA .10           DIRECTORY ENTRY
0693  05565 002020         SSA
0694  05566 127460R        JMP GENID,I   ROOM FOR ANOTHER ENTRY RETURN
0695  05567 003400         CCA
0696  05570 017661R        JSB OUTID     SET ANOTHER DIRECTORY ENTRY FOLLO
0697  05571 067374R        LDB ICNT
0698  05572 077443R        STB TEMP      SET ZERO OUTPUT COUNT
0699  05573 057546R        CPB N128
0700  05574 127460R        JMP GENID,I
0701  05575 002400         CLA
0702  05576 017661R        JSB OUTID     OUTPUT ZERO TO DIR BUFFER
0703  05577 037443R        ISZ TEMP
0704  05600 027575R        JMP *-3       OUTPUT ANOTHER ZERO TO BUFFER
0705  05601 127460R        JMP GENID,I   RETURN
0706  05602 000000  LIBRY  NOP           FIRST LIBR PROG LOAD ADDRESS
0707*
0708* DVRAD    SEARCHES THE LST FOR THE I.XX & C.XX
0709*          ENTRY POINTS FOR THE I/O DRIVER BEING
0710*          LOADED.
0711*          THESE VALUES ARE THEN STORED IN
0712*          WORDS 10 & 11 OF THE DIRECTORY ENTRY
0713*
0714  05603 163311R DVRAD  LDA ID2,I      FIND THE XX NUMBER FROM
0715  05604 010073         AND M177         THE DVRXX NAME. STORE
0716  05605 001727         ALF,ALF          THE ASCII XX IN TEMP.
0717  05606 073443R        STA TEMP
0718  05607 163312R        LDA ID3,I
0719  05610 001727         ALF,ALF
0720  05611 010073         AND M177
0721  05612 033443R        IOR TEMP
0722  05613 073443R        STA TEMP
0723*
0724  05614 016230R        JSB INLST      SEARCH LST
0725  05615 016234R DVR1   JSB LSTX
0726  05616 027633R        JMP DVR2
0727  05617 163277R        LDA LST1,I
0728  05620 053657R        CPA IDEC         I.  ?
0729  05621 027630R        JMP IP
0730  05622 053660R        CPA CDEC         C.  ?
```

```
0731  05623 002001         RSS
0732  05624 027615R        JMP DVR1
0733  05625 017640R        JSB DVRS       CHECK FOR CORRECT XX
0734  05626 073602R        STA LIBRY      SET C,XX ADDRESS
0735  05627 027615R        JMP DVR1
0736*
0737  05630 017640R IP     JSB DVRS       CHECK FOR CORRECT XX
0738  05631 073423R        STA PRENT      SET I,XX ADDRESS
0739  05632 027615R        JMP DVR1
0740*
0741  05633 063423R DVR2   LDA PRENT
0742  05634 017661R        JSB OUTID      OUTPUT WORD 10 - I,XX
0743  05635 063602R        LDA LIBRY
0744  05636 017661R        JSB OUTID      OUTPUT WORD 11 - C,XX
0745  05637 027560R        JMP DVRTN
0746*
0747*
0748  05640 000000  DVRS   NOP
0749  05641 163300R        LDA LST2,I     XX MATCH?
0750  05642 053443R        CPA TEMP
0751  05643 002001         RSS
0752  05644 027615R        JMP DVR1         NO
0753  05645 163301R        LDA LST3,I
0754  05646 010075         AND M1774
0755  05647 053453R        CPA UBLNK      5TH CAHR = BLANK?
0756  05650 002001         RSS
0757  05651 027615R        JMP DVR1         NO
0758  05652 163303R        LDA LST5,I     GET BP LINK
0759  05653 043330R        ADA BPOIT      COMPUTE ABSOLUTE ADDRESS
0760  05654 043510R        ADA BPBUF
0761  05655 160000         LDA A,I
0762  05656 127640R        JMP DVRS,I     RETURN WITH ADDRESS IN "A"
0763*
0764  05657 044456  IDEC   ASC 1,I,
0765  05660 041456  CDEC   ASC 1,C,
0766*
0767*
0768*     OUTID STORES DIRECTORY ENTRIES IN ID SEGMENT BUFFER
0769*  AND WRITES IT ON DISC WHEN IT BECOMES FULL.
0770*
0771  05661 000000  OUTID  NOP
0772  05662 173336R        STA CURAI,I    STORE WORD INTO ID BUFFER
0773  05663 037336R        ISZ CURAI      INCR BUFFER ADDER
0774  05664 037374R        ISZ ICNT       INCR COUNT
0775  05665 127661R        JMP OUTID,I    RETURN-NOT FULL
0776  05666 017777R        JSB SETCR       SET USER DISC FLAG IN BASE PAGE
0777  05667 063356R        LDA DSKID
0778  05670 067551R        LDB AIBUF
0779  05671 016473R        JSB DISKO      WRITE 1 SECTOR OF DIRECTORY
0780  05672 067551R        LDB AIBUF
0781  05673 077336R        STB CURAI      SET NEW CURRENT IBUF ADDR
0782  05674 016516R        JSB BUFCL      CLEAR BUFFER
0783  05675 060174         LDA TSONE       CURRENT DISC ADDRESS
0784  05676 073356R        STA DSKID
0785  05677 010074         AND M377
0786  05700 002003         SZA,RSS        NO
```

```
0787   05701 026330R          JMP DRCHA      OUT OF DIRECTORY SPACE
0788   05702 063546R          LDA N128
0789   05703 073374R          STA ICNT       SET CURRENT IBUF COUNT
0790   05704 127661R          JMP OUTID,I    RETURN
```

```
0792*     LABDO PUTS OUT CURRENT ABSOLUTE CODE WORD FOR THE PROGRAM
0001*  BEING LOADED.
0002*    IF WORD IS IN CURRENT SECTOR, IT IS INSERTED.
0003*    IF WORD DOES NOT FIT IN CURRENT SECTOR, THE CURRENT SECTOR
0004*  IS OUTPUT AND THE NEW SECTOR READ IN.
0005*    ADDITIONALLY, THERE ARE CHECKS FOR MEMORY OVERFLOW AND MEMORY
0006*  OVERLAP
0007*     CALLING SEQUENCE:
0008*          LDA <CURRENT ABSOLUTE CODE WORD>
0009*          LDB <CURRENT ABSOLUTE ADDRESS>
0010*          JSB LABDO
0011  05705 000000  LABDO NOP
0012  05706 073436R       STA TABS     ABSOLUTE CODE WORD
0013  05707 077437R       STB TADR     ABSOLUTE CORE ADDRESS
0014  05710 077426R       STB RELAD    UPDATE  RELOCATION ADDRESS
0015  05711 007004        CMB,INB
0016  05712 047460R       ADB UMLWA    CHECK IF MEMORY OVERFLOW
0017  05713 006021        SSB,RSS
0018  05714 027717R       JMP LAB10    NO
0019  05715 063470R       LDA ERR03    YES-SO OUTPUT MESSAGE
0020  05716 026630R       JMP ABRTX       AND ABORT
0021  05717 063331R LAB10 LDA CBASE    COMPUTE # OF WORDS
0022  05720 003004        CMA,INA
0023  05721 043437R       ADA TADR
0024  05722 016264R       JSB RRL9
0025  05723 073447R       STA TWORD    WORD #
0026  05724 007004        CMB,INB
0027  05725 077441R       STB TCNT
0028  05726 063342R       LDA DBASE
0029  05727 006003        SZB,RSS
0030  05730 027734R       JMP *+4
0031  05731 016451R       JSB DISKA
0032  05732 037441R       ISZ TCNT
0033  05733 027731R       JMP *-2
0034  05734 073445R       STA TNEXT    ABSLLUTE TRACK/SECTOR #
0035  05735 053350R       CPA DCRNT    CHECK IF CURRENT SECTOR
0036  05736 027743R       JMP LAB20    YES
0037  05737 016114R       JSB REMDO      NO- WRITE OUT CURRENT SECTOR
0038  05740 063445R       LDA TNEXT
0039  05741 073350R       STA DCRNT
0040  05742 016010R       JSB CLRTK     SNOWPLOW TRACKS
0041  05743 067550R LAB20 LDB ADBUF    COMPUTE ADDRESS TO STORE WORD
0042  05744 047447R       ADB TWORD
0043  05745 063436R       LDA TABS     CHECK IF ABS WORD IS HALT 0
0044  05746 002003        SZA,RSS
0045  05747 027767R       JMP LAB40    YES-SO DON'T STORE
0046  05750 160001        LDA B,I      SO-SO CHECK IF WORD IN BUFFER
0047  05751 002003        SZA,RSS       IS 0
0048  05752 027765R       JMP LAB30    YES-SO GO STORE
0049  05753 063346R       LDA DBUGF    CHECK IF DEBUG FLAG SET
0050  05754 002002        SZA          NO-SO MEMORY OVERLAY
0051  05755 027763R       JMP LAB25     YES
0052  05756 063420R       LDA PLGTH     CHECK IF COMPILER PRODUCED PROG
0053  05757 002020    SSA              SKIP-ASSEMBLER PRODUCED
0054  05760 027765R       JMP LAB30
0055  05761 063505R       LDA ERR16     NO-SO PROGRAM OVERLAY
```

```
0056  05762 026630R        JMP ABRTX
0057  05763 002400  LA825  CLA
0058  05764 073346R        STA DBUGF     CLEAR DEBUG FLAG
0059  05765 063436R LA830  LDA TABS
0060  05766 170001         STA B,I        STORE WORD IN BUFFER
0061  05767 063426R LA840  LDA RELAD     CHECK IF NEW MAXIMUM ADDRESS
0062  05770 070001         STA B
0063  05771 003004         CMA,INA
0064  05772 043405R        ADA MAXAD
0065  05773 002021         SSA,RSS
0066  05774 127705R        JMP LABDO,I    RETURN
0067  05775 077405R        STB MAXAD     SET NEW MAX ADDRESS
0068  05776 127705R        JMP LABDO,I   RETURN
```

```
0070  05777 000000  SETCR NOP             SET USER DISC FLAG IN BASE PAGE
0071  06000 060056        LDA .3
0072  06001 073351R       STA DISCX
0073  06002 127777R       JMP SETCR,I
0074*
0075*  BASE PAGE STORE
0076*
0077  06003 000000  BPSTR NOP             STORE A IN B
0078  06004 016001X       JSB EXEC
0079  06005 006007R       DEF *+2
0080  06006 007427R       DEF N19
0081  06007 126003R       JMP BPSTR,I
0082*
0083*  CLEAR TRACKS
0084*
0085  06010 000000  CLRTK NOP
0086  06011 001727        ALF,ALF         RIGHT JUSTIFY
0087  06012 010074        AND M377        TO LOW 8 BITS
0088  06013 043362R       ADA DSKTM       COMPARE TO UPPR TRACK LIMIT
0089  06014 002021        SSA,RSS         NOT TO BIG IF NEG
0090  06015 026330R       JMP DRCHA       ERROR L10
0091  06016 063350R       LDA DCRNT       CURRENT REQUEST T/S
0092  06017 010075        AND M1774
0093  06020 001727        ALF,ALF         RIGHT JUSTIFY
0094  06021 070001        STA B           B = TRACK
0095  06022 063350R       LDA DCRNT       CURRENT REQUEST T/S
0096  06023 010074        AND M377        A = SECTOR
0097  06024 047363R       ADB DSK01       =,S COMP OF LAST TRACK CLEARED
0098  06025 006020        SSB             ALREADY ZEROED IF NEG
0099  06026 026064R       JMP LAB19
0100  06027 006002        SZB
0101  06030 026036R       JMP UPDAT       WRITE ZEROS ON DISC UP TO TNEXT
0102  06031 043364R       ADA DSK02       CPMPARE SECTOR COUNTS
0103  06032 002020        SSA
0104  06033 026064R       JMP LAB19       ALREADY ZEROED IF NEG
0105  06034 002003        SZA,RSS         0 IS OK; > 0 NEEDS UPDATE
0106  06035 026064R       JMP LAB19
0107  06036 067550R UPDAT LDB ADBUF       CLEAR 128 WD BUFFER (DBUF)
0108  06037 016516R       JSB BUFCL
0109  06040 017777R       JSB SETCR
0110  06041 063365R UPDA1 LDA DSKUD
0111  06042 067550R       LDB ADBUF
0112  06043 016473R       JSB DISKO       WRITE SECTOR OF 0,S ON DISC
0113  06044 063365R       LDA DSKUD
0114  06045 064174        LDB TSONE       UPDATE NEXT T/S NOT CLEARED
0115  06046 077365R       STB DSKUD
0116  06047 070001        STA B
0117  06050 053350R       CPA DCRNT       DONE IF COMPARE
0118  06051 026054R       JMP *+3
0119  06052 017777R       JSB SETCR
0120  06053 026041R       JMP UPDA1
0121  06054 010075        AND M1774
0122  06055 001727        ALF,ALF
0123  06056 003004        CMA,INA
0124  06057 073363R       STA DSK01       COMP OF LAST TRACK CLEARED
0125  06060 060001        LDA B
```

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0126  06061 010074         AND M377
0127  06062 003004         CMA,INA
0128  06063 073364R        STA DSK02      COMP OF LAST SECTOR CLEARED
0129  06064 017777R LAB19  JSB SETCR
0130  06065 063350R        LDA DCRNT
0131  06066 067550R        LDB ADBUF
0132  06067 016465R        JSB DISKI     READ IN DESIRED SECTOR
0133  06070 126010R        JMP CLRTK,I
0134*
0135*  INITIALIZE 1ST DISC TRACK
0136*
0137  06071 000000  INDSK NOP
0138  06072 072114R        STA REMDO      SAVE TEMP
0139  06073 010075         AND M1774      GET START TRAK NUM
0140  06074 001727         ALF,ALF        RIGHT JUSTIFY
0141  06075 003004         CMA,INA        MAKE NEG
0142  06076 073363R        STA DSK01
0143  06077 062114R        LDA  REMDO
0144  06100 010074         AND M377       GET START SECTOR NUM
0145  06101 003004         CMA,INA
0146  06102 073364R        STA DSK02
0147  06103 067550R        LDB ADBUF
0148  06104 016516R        JSB BUFCL
0149  06105 017777R        JSB SETCR
0150  06106 062114R        LDA  REMDO
0151  06107 067550R        LDB ADBUF      CORA ADDRESS
0152  06110 016473R        JSB DISKO      WRITE DISC
0153  06111 060174         LDA TSONE      NEXT AVAILABLE T/S
0154  06112 073365R        STA DSKUD
0155  06113 126071R        JMP INDSK,I
0156*
0157*     REMDO OUTPUTS CURRENT BUFFER.
0158*  NORMALLY USED WHEN CODE FOR MAIN PROGRAM OR SEGMENT HAS BEEN
0159*  GENERATED.
0160*
0161  06114 000000  REMDO NOP
0162  06115 017777R        JSB SETCR      SET USER DISC FLAG IN BASE PAGE
0163  06116 063350R        LDA DCRNT
0164  06117 067550R        LDB ADBUF
0165  06120 016473R        JSB DISKO
0166  06121 126114R        JMP REMDO,I
0167*     READ IN INITIAL DISC SECTOR
0168  06122 000000  DINIT NOP
0169  06123 063353R        LDA DSKAD     SACE INITIAL DISC ADDRESS
0170  06124 073342R        STA DBASE
0171  06125 073350R        STA DCRNT
0172  06126 016071R        JSB INDSK      INITILIZE START DISC TRAK ADD
0173  06127 002400         CLA
0174  06130 073405R        STA MAXAD      CLEAR MAXIMUM ADDRESS FLAG
0175  06131 126122R        JMP DINIT,I
0176*     COMPUTE AND UPDATE DSKAD ADDRESS
0177  06132 000000  RESET NOP
0178  06133 062210R        LDA TBUF
0179  06134 072263R        STA TTBUF
0180  06135 006400         CLB
0181  06136 063332R        LDA CLXXX
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0182  06137 077332R        STB CLXXX
0183  06140 002003         SZA,RSS
0184  06141 026245R        JMP RES05
0185  06142 016261R        JSB INIDX
0186  06143 016265R RES15  JSB IDX
0187  06144 026211R        JMP RES50
0188  06145 163310R        LDA ID1,I      CHECK IF IDENT IS -DEBUG-
0189  06146 053461R        CPA CHRDE
0190  06147 002001         RSS
0191  06150 026161R        JMP RES20      NO
0192  06151 163311R        LDA ID2,I
0193  06152 053462R        CPA CHRDE+1
0194  06153 002001         RSS
0195  06154 026161R        JMP RES20      NO
0196  06155 163312R        LDA ID3,I
0197  06156 010075         AND M1774
0198  06157 053463R        CPA CHRDE+2
0199  06160 026176R        JMP RES30      YES
0200  06161 163310R RES20  LDA ID1,I      CHECK IF -DBKPT-
0201  06162 053472R        CPA CHRDB
0202  06163 002001         RSS
0203  06164 026143R        JMP RES15      NO
0204  06165 163311R        LDA ID2,I
0205  06166 053473R        CPA CHRDB+1
0206  06167 002001         RSS
0207  06170 026143R        JMP RES15
0208  06171 163312R        LDA ID3,I
0209  06172 010075         AND M1774
0210  06173 053474R        CPA CHRDB+2
0211  06174 002001         RSS            YES
0212  06175 026143R        JMP RES15      NO
0213  06176 173312R RES30  STA ID3,I      CLEAR USEAGE
0214  06177 067563R        LDB PLAD       CLEAR PLIST LOADED FLAG
0215  06200 160001         LDA B,I
0216  06201 001665         ELA,CLE,ERA
0217  06202 053310R        CPA ID1
0218  06203 026206R        JMP RES40
0219  06204 006004         INB
0220  06205 026200R        JMP RES30+2
0221  06206 002400  RES40   CLA
0222  06207 170001         STA B,I
0223  06210 026143R        JMP RES15
0224  06211 063340R RES50  LDA CURAP      MOVE PLIST POINTER
0225  06212 040051         ADA N2           BACK 2 ENTRIES
0226  06213 073340R        STA CURAP
0227  06214 060047         LDA N4
0228  06215 073441R        STA TCNT
0229  06216 067455R        LDB DADRR
0230  06217 077443R        STB TEMP
0231  06220 163443R RES60  LDA TEMP,I
0232  06221 072210R        STA TBUF       SET NAME FOR LSCAN
0233  06222 037443R        ISZ TEMP
0234  06223 163443R        LDA TEMP,I
0235  06224 072211R        STA TBUF+1
0236  06225 037443R        ISZ TEMP
0237  06226 163443R        LDA TEMP,I
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0238  06227 072212R        STA TBUF+2
0239  06230 037443R        ISZ TEMP
0240  06231 017341R        JSB LSCAN     SEARCH LST FOR SYMBOL
0241  06232 026243R        JMP RES70     NOT FOUND
0242  06233 163301R        LDA LST3,I    FOUND
0243  06234 010075         AND M1774
0244  06235 173301R        STA LST3,I     CLEAR ORDINAL
0245  06236 163302R        LDA LST4,I
0246  06237 001665         ELA,CLE,ERA
0247  06240 173302R        STA LST4,I    SET IDENT POSITIVE
0248  06241 002400         CLA
0249  06242 173303R        STA LST5,I    CLEAR BP LINK ADDRESS
0250  06243 037441R RES70  ISZ TCNT
0251  06244 026220R        JMP RES60
0252  06245 062263R RES05  LDA TTBUF      BASE PROGRAM ADDRESS
0253  06246 003004         CMA,INA
0254  06247 043602R        ADA TPREL      ADD MAXIMUM ADDRESS FLAG
0255  06250 016264R        JSB RRL9
0256  06251 002002         SZA
0257  06252 006004         INB
0258  06253 007004         CMB,INB
0259  06254 077441R        STB TCNT        NEG # SECTORS USED
0260  06255 063342R        LDA DBASE      GET STARTING DISC ADDRESS
0261  06256 016451R        JSB DISKA      INCR # OF SECTORS
0262  06257 037441R        ISZ TCNT       USED TIME
0263  06260 026256R        JMP *-2
0264  06261 073353R        STA DSKAD      STORE NEXT DISC T/S ADDRESS
0265  06262 126132R        JMP RESET,I
0266  06263 000000  TTBUF  NOP
0267  06264 000000  RRL9   NOP           DO RRL 9 TO B+A REG
0268  06265 070001         STA B
0269  06266 013544R        AND M7600      MASK OF UPPER 9 BITS
0270  06267 001727         ALF,ALF        TAKE UPPER 9 BITS TO LOW
0271  06270 001200         RAL
0272  06271 072436R        STA CLIST
0273  06272 060001         LDA B
0274  06273 010073         AND M177       MASK LOW 7 BITS
0275  06274 066436R        LDB CLIST
0276  06275 126264R        JMP RRL9,I
0277* CLRLT CLEARS THE CURRENT BP LINKAGE ADDRESSES IN LST
0278* TO MAKE THEM UNAVAILABLE TO THE SUCCEEDING PROGRAMS. THIS CONSIST
0279* OF CLEARING WORDS OF THE LST ENTRY AND THE CORRESLPONDING BP LINK
0280* VALUE IN THE BASE PAGE BUFFER.
0281*    CALLING SEQUENCE:
0282*        LDA <LOW BASE PAGE ADDRESS>
0283*        LDB <HIGH BASE PAGE ADDRESS>
0284*        JSB CLRLT
0285  06276 000000  CLRLT NOP
0286  06277 003004         CMA,INA
0287  06300 073404R        STA LOWER     SAVE LOWER BOUND
0288  06301 007004         CMB,INB
0289  06302 077450R        STB UPPER     SAVE UPPER BOUND
0290  06303 016230R        JSB INLST     INITIALOZE LST SCAN
0291  06304 016234R CLRNX  JSB LSTX      SET LST ADDRESSES
0292  06305 026321R        JMP CLBPS     GO TO CLEAR BP
0293  06306 163303R        LDA LST5,I    CHECK IF BP LINK TO BE CLEARED
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0294  06307 043404R        ADA LOWER
0295  06310 002020         SSA
0296  06311 026304R        JMP CLRNX     TRY NEXT ENTRY
0297  06312 163303R        LDA LST5,I
0298  06313 043450R        ADA UPPER
0299  06314 002021         SSA,RSS
0300  06315 026304R        JMP CLRNX     TRY NEXT ENTRY
0301  06316 006400         CLB
0302  06317 177303R        STB LST5,I    CLEAR BP LINK ADDRESS
0303  06320 026304R        JMP CLRNX     TRY NEXT ENTRY
0304  06321 067404R CLBPS   LDB LOWER     CLEAR BP LINK BUFFER BETWEEN
0305  06322 007004         CMB,INB       UPPRR AND LOWER LIMITS
0306  06323 063450R        LDA UPPER
0307  06324 040001         ADA B
0308  06325 002021         SSA,RSS
0309  06326 126276R        JMP CLRLT,I   RETURN
0310  06327 073453R        STA WDCNT
0311  06330 047510R        ADB BPBUF     ADJUST FOR BASE PAGE
0312  06331 047330R        ADB BPOIT
0313  06332 002400         CLA
0314  06333 170001         STA B,I
0315  06334 006004         INB
0316  06335 037453R        ISZ WDCNT
0317  06336 026333R        JMP *-3
0318  06337 126276R        JMP CLRLT,I   RETURN
0319*     BPOUT OUTPUTS THE BASE PAGE SECTION OF CODE FOLLOWING THE
0320*  LOADING OF EACH MAIN OR SEGMENT, DISC ADDRESS IN DSKAD.
0321*     CALLING SEQUENCE:
0322*          LDA <UPPER BP ADDRESS>
0323*          LDB <LOWER BP ADDRESS>
0324*          JSB BPOUT
0325  06340 000000  BPOUT NOP
0326  06341 003004         CMA,INA
0327  06342 040001         ADA B
0328  06343 073441R        STA TCNT      SAVE BP LENGHT
0329  06344 047510R        ADB BPBUF     ADJUST FOR BP ADDRESS
0330  06345 047330R        ADB BPOIT
0331  06346 077341R        STB CURAT     SAVE CURRENT LOW CORE ADDRESS
0332  06347 002021         SSA,RSS
0333  06350 126340R        JMP BPOUT,I   RETURN-ALL CODE OUT
0334  06351 017777R BPSYO   JSB SETCR       USER AREA
0335  06352 063353R        LDA DSKAD      CURRENT DISC ADDRESS
0336  06353 067341R        LDB CURAT      CURRENT LOW CORE ADDRESS
0337  06354 016473R        JSB DISKO      OUTPUT CURRENT BP SECTOR
0338  06355 060174         LDA TSONE      CURRENT DISC ADDRESS
0339  06356 073353R        STA DSKAD
0340  06357 067441R        LDB TCNT
0341  06360 047547R        ADB .128
0342  06361 077441R        STB TCNT      SAVE REMAINING COUNT
0343  06362 006021         SSB,RSS       CHECK IF MORE TO OUTPUT
0344  06363 126340R        JMP BPOUT,I   RETURN-ALL CODE OUT
0345  06364 067341R        LDB CURAT
0346  06365 047547R        ADB .128
0347  06366 077341R        STB CURAT     SET NEXT CORE ADDRESS
0348  06367 026351R        JMP BPSYO     OUTPUT NEXT BP SECTOR TO DISC
0349*     CONVD CONVERTS CONTENTS OF A TO ASCII DECIMAL OR OCTAL AND
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0350*  STORES RESULT AT LOCATION SPECIFIED IN B.
0351*     CALLING SEQUENCE:
0352*          LDA <# TO BE CONVERTED> +=OCTAL; -=DECIMAL
0353*          LDB <ADDR TO STORE RESULT>
0354*          JSB CONVD
0355  06370 000000  CONVD NOP
0356  06371 077341R        STB CURAT     SET STORE ADDRESS
0357  06372 067564R        LDB OPWRS     ADDRESS OF OCTAL LOWERS
0358  06373 002020         SSA
0359  06374 067572R        LDB DPWRS     ADDRESS OF DECIMAL POWERS
0360  06375 077425R        STB RANAD     SET POWER RANGE ADDRESS
0361  06376 002021         SSA,RSS
0362  06377 003004         CMA,INA       CONVERT # TO NEGATIVE
0363  06400 070001         STA B
0364  06401 060051         LDA N2
0365  06402 073441R        STA TCNT      SET CONVERSION COUNTER
0366  06403 016421R        JSB GETD
0367  06404 033453R        IOR UBLNK
0368  06405 173341R        STA CURAT,I   SAVE BLANK,FIRST DIGIT
0369  06406 037341R        ISZ CURAT
0370  06407 016421R NEXTD  JSB GETD      GET NEXT DIGIT
0371  06410 001727         ALF,ALF
0372  06411 173341R        STA CURAT,I   SAVE AS UPPER CHARACTER
0373  06412 016421R        JSB GETD      GET NEXT DIGIT
0374  06413 133341R        IOR CURAT,I   ADD UPPER CHARACTER
0375  06414 173341R        STA CURAT,I   STORE NEXT 2 CHARACTERS
0376  06415 037341R        ISZ CURAT
0377  06416 037441R        ISZ TCNT
0378  06417 026407R        JMP NEXTD     GET NEXT 2 DIGITS
0379  06420 126370R        JMP CONVD,I   RETURN -DONE
0380  06421 000000  GETD   NOP
0381  06422 002400         CLA
0382  06423 147425R INCRA  ADB RANAD,I   ADD POWER
0383  06424 007026         CMB,SSB,INB,SZB
0384  06425 026431R        JMP *+4       DIGIT FOUND
0385  06426 002004         INA           INCR DIGIT
0386  06427 007004         CMB,INB       RESTORE REMAINDER TO NEG
0387  06430 026423R        JMP INCRA     RRY NEXT HIGHER DIGIT
0388  06431 147425R        ADB RANAD,I   ADD POWER
0389  06432 007004         CMB,INB       RESTORE REMAINDER
0390  06433 037425R        ISZ RANAD     INCR POWER LIST ADDRESS
0391  06434 033540R        IOR M60       CONVERT TO ASCII
0392  06435 126421R        JMP GETD,I    RETURN
0393*
0394*     CLIST CLEARS MEMORY MAP BUFFER WITH BLANKS
0395*
0396  06436 000000  CLIST NOP
0397  06437 067557R        LDB AMLST     ADDRESS OF MLIST
0398  06440 063430R        LDA N18
0399  06441 073320R        STA AMAD
0400  06442 063451R        LDA BLNKS     TWO ASCII BLANKS
0401  06443 170001         STA B,I       CLEAR BUFFER WORD
0402  06444 006004         INB
0403  06445 037320R        ISZ AMAD
0404  06446 026443R        JMP *-3
0405  06447 126436R        JMP CLIST,I   RETURN-BUFFER CLEARED
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0406*
0407*      IDSCN SCANS PROGRAM IDENT LIST FOR PROGRAM MAIN OR SEGMENT,
0408*  PROGRAM TYPE SET IN PTYPE.
0409*      CALLING SEQUENCE:
0410*          JSB IDSCN
0411*      RETURN
0412*          (N+1) = END OF IDENTS
0413*          (N+2) = PROG FOUND  E=M/S FOR CURRENT PROGRAM.
0414*
0415  06450 000000  IDSCN NOP
0416  06451 063307R       LDA CIDNT     GET NEXT IDENT IN SCAN
0417  06452 073305R       STA TIDNT     SET IDENT ADDRESS FOR IDX
0418  06453 016265R       JSB IDX       SET IDENT ADDRESS
0419  06454 126450R       JMP IDSCN,I   RETURN-END OF IDENTS
0420  06455 063310R       LDA ID1       GET CURRENT MAIN IDENT ADDRESS
0421  06456 073377R       STA IMAIN
0422  06457 063305R       LDA TIDNT
0423  06460 073307R       STA CIDNT     SAVE NEXT IDENT ADDR
0424  06461 163315R       LDA ID6,I     GET TYPE
0425  06462 001265        RAL,CLE,ERA   SET E=M/S
0426  06463 010073        AND M177
0427  06464 053424R       CPA PTYPE     CURRENT PROGRAM TYPE?
0428  06465 002001        RSS           YES
0429  06466 026453R       JMP IDSCN+3   NO-GO TRY NEXT IDENT
0430  06467 036450R       ISZ IDSCN     INCR RETURN ADDRESS
0431  06470 126450R       JMP IDSCN,I   RETURN
0432*
0433*      GETP DECIPHERS OPERATOR PARAMETER INPUT DATA.
0434*  RESULTS STORED IN PBUF AND A REGISTER INDICATES TERMINATION
0435*  CHARACTER; 0 INDICATES END OF INPUT, COMMA, LEFT PARENTHESIS, AND
0436*  RIGHT PARENTHESIS INDICATES THAT MORE DATA FOLLOWS.
0437*
0438  06471 000000  GETP  NOP
0439  06472 063451R       LDA BLNKS     SET PBUF TO ASCII BLANKS
0440  06473 072214R       STA PBUF
0441  06474 072215R       STA PBUF+1
0442  06475 072216R       STA PBUF+2
0443  06476 062625R       LDA NEGPM
0444  06477 002003        SZA,RSS
0445  06500 126471R       JMP GETP,I
0446  06501 063562R       LDA DFPBF     SET CONVERTED CHARACTER STORE
0447  06502 000066        CLE,ELA       ADDRESS
0448  06503 073454R       STA XPREL
0449  06504 066626R GET10 LDB PMBUF
0450  06505 004065        CLE,ERB       CONVERT TO WORD ADDRESS
0451  06506 160001        LDA B,I       GET DATA WORD FROM INPUT BUFFER
0452  06507 002041        SEZ,RSS       CHECK IF HI OR LOW CHAR
0453  06510 001727        ALF,ALF       SHIFT HI INTO LOW
0454  06511 010074        AND M377      ISOLATE CHARACTER
0455  06512 005600        ELB           INCREMENT INPUT BUFFER CHARACTER
0456  06513 006004        INB           ADDRESS
0457  06514 076626R       STB PMBUF
0458  06515 053535R       CPA COMMA     COMMA?
0459  06516 026552R       JMP GET20
0460  06517 053536R       CPA LPARN     LEFT PARENTHESIS?
0461  06520 026552R       JMP GET20
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0462  06521 053537R        CPA RPARN      RIGHT PARENTHESIS?
0463  06522 026552R        JMP GET20
0464  06523 052555R        CPA SLASH
0465  06524 026551R        JMP GET15
0466  06525 067454R        LDB XPREL      GET STORE CHARACTER ADDRESS
0467  06526 004065          CLE,ERB        CONVERT TO WORD ADDRESS
0468  06527 002041          SEZ,RSS        CHECK IF HI OR LOW STORE POSIT.
0469  06530 001727          ALF,ALF        SHIFT INTO HIGH
0470  06531 073370R         STA EXCNT      SAVE CHARACTER
0471  06532 160001          LDA B,I        GET STORED BUFFER WORD
0472  06533 002040          SEZ
0473  06534 026537R         JMP *+3
0474  06535 010074          AND M377       SAVE LOW CHARACTER
0475  06536 002001          RSS
0476  06537 010075          AND M1774      SAVE HI CHARACTER
0477  06540 033370R         IOR EXCNT      IOR IN CURRENT CHARACTER
0478  06541 170001          STA B,I        SAVE IN BUFFER
0479  06542 005600          ELB
0480  06543 006004          INB            INCREMENT STORE ADDRESS
0481  06544 077454R         STB XPREL
0482  06545 036625R         ISZ NEGPM
0483  06546 026504R         JMP GET10      GO TO PROCESS NEXT CHARACTER
0484  06547 002400          CLA            SET A TO INDICATE END
0485  06550 126471R         JMP GETP,I     RETURN
0486  06551 063454R GET15   LDA SLSHE
0487  06552 036625R GET20   ISZ NEGPM
0488  06553 126471R         JMP GETP,I
0489  06554 126471R         JMP GETP,I
0490  06555 000057  SLASH   OCT 57
0491*
0492*     PROGL CHECKS IF SPECIFIC PROGRAMS WITHIN A FILE ARE TO BE
0493*  LOADED. THE PROGRAM LIST BEGINS WITH A LEFT PARENTHESIS AND
0494*  TERMINATES WITH A RIGHT PARENTHESIS. PROGRAMS WITHIN THE FILE
0495*  ARE SEPARATED BY COMMAS.
0496*
0497  06556 000000  PROGL   NOP
0498  06557 002400          CLA            CLEAR PROGRAM NAME COUNTER
0499  06560 073413R         STA PCNTT
0500  06561 063563R         LDA PLAD       SET PROGRAM NAME BUFFER ADDRESS
0501  06562 072624R         STA PCONT
0502  06563 063444R         LDA TERMN      CHECK IF AT END OF PARAMETERS
0503  06564 002003          SZA,RSS
0504  06565 126556R         JMP PROGL,I    END-SO RETURN
0505  06566 053536R         CPA LPARN      CHECK IF LEFT PARENTHESIS
0506  06567 002001          RSS            YES-SO PROGRAMS SPECIFIED
0507  06570 126556R         JMP PROGL,I    NO-SO RETURN
0508  06571 016471R PROG5   JSB GETP       GET ONE CONTROL PARAMETER
0509  06572 073444R         STA TERMN
0510  06573 002003          SZA,RSS
0511  06574 126556R         JMP PROGL,I
0512  06575 062214R         LDA PBUF
0513  06576 172624R         STA PCONT,I    SAVE PROG NAME IN BUFFER
0514  06577 036624R         ISZ PCONT
0515  06600 062215R         LDA PBUF+1
0516  06601 172624R         STA PCONT,I
0517  06602 036624R         ISZ PCONT
```

```
0518  06603 062216R        LDA PBUF+2
0519  06604 010075         AND M1774
0520  06605 172624R        STA PCONT,I
0521  06606 036624R        ISZ PCONT
0522  06607 037413R        ISZ PCNTT      INCREMENT PROGRAM NAME COUNTER
0523  06610 063444R        LDA TERMN
0524  06611 053537R        CPA RPARN      CHECK IF AT END OF PROG LIST
0525  06612 002001         RSS            YES, SO CHECK IF MORE FOLLOWS
0526  06613 026621R        JMP PROG9     GO CHECK IF AT END OF INPUT
0527  06614 002003         SZA,RSS
0528  06615 126556R        JMP PROGL,I   RETURN-NO MORE INPUT
0529  06616 016471R        JSB GETP       SKIP OVER NEXT CHARACTRR TO GET
0530  06617 073444R        STA TERMN           TRUE TERMINATION SYMBOL
0531  06620 126556R        JMP PROGL,I   RETURN FOR PROGRAM PROCESSING
0532  06621 002002  PROG9  SZA            CHECK IF AT END OF INPUT
0533  06622 026571R        JMP PROG5      NO-GET NEXT PARAMETER
0534  06623 126556R        JMP PROGL,I    YES-SO RETURN
0535  06624 000000  PCONT  NOP
0536  06625 000000  NEGPM  NOP           NEG # INPUT CHAR COUNT
0537  06626 000000  PMBUF  NOP           INPUT BUFFER CHAR ADDR
```

```
0539*
0540*  ERROR MESSAGES
0541*
0542   06627 063472R LOVER LDA ERR05     OUTPUT L05 MESSAGE
0543   06630 016344R ABRTX JSB ERROR
0544   06631 063434R ABORT LDA .16       OUTPUT: LOADR TERMINATED MESSAGE
0545   06632 066736R       LDB MESAB
0546   06633 016331R       JSB SYOUT
0547   06634 026670R       JMP LTERM
0548*
0549*  SET SIMULATED END-OF-TAPE
0550*
0551   06635 000000  SET   NOP
0552   06636 063415R       LDA PGMIN
0553   06637 010072        AND M77
0554   06640 002003        SZA,RSS
0555   06641 126635R       JMP SET,I
0556   06642 050055        CPA .2
0557   06643 126635R       JMP SET,I
0558   06644 033441R       IOR M700
0559   06645 073443R       STA TEMP
0560   06646 016001X       JSB EXEC      SET SIMULATED END OF TAPE
0561   06647 006652R       DEF *+3
0562   06650 000056        DEF .3
0563   06651 011443R       DEF TEMP
0564   06652 126635R       JMP SET,I
```

```
0566*
0567* THE FOLLOWING ROUTINES PROCESS TWO RECORDS ENTERED
0568*  VIA THE BATCH DEVICE. BOTH RECORDS SHOULD CONTAIN
0569*  TWO OCTAL NUMBERS (MAX 5 DIGITS EACH) SEPARATED
0570*  BY EITHER A BLANK OR A COMMA. IF EITHER OF THESE
0571*  NUMBERS IS OMITTED,THE DEFAULT SYSTEM VALUE WILL
0572*  BE ASSUMED.  THE FIRST RECORD IS INTERPRETED AS
0573*  LOWER & UPPER BASE PAGE BOUNDS.  THE SECOND
0574*  RECORD IS INTERPRETED AS LOWER & UPPER MAIN
0575*  PROGRAM BOUNDS.
0576*
0577*  IF THE BATCH DEVICE IS THE SYSTEM CONSOLE, INPUT
0578*  OF THE RECORDS WILL BE PROMPTED BY:
0579*
0580*              BP   BND (L,U)?
0581*              PROG BND (L,U)?
0582*
0583*   AN ERROR IN THE FIRST RECORD WILL RESULT IN AN
0584*   L18 ERROR; AN ERROR IN THE SECOND AN L19. FOL-
0585*   LOWING THE ERROR, THE RECORD MAY BE RE-ENTERED.
0586*
0587*  IF THE BATCH DEVICE IS NOT THE SYSTEM CONSOLE,
0588*  INPUT OF THE RECORDS SHOULD IMMEDIATELY FOLLOW
0589*  THE :PR,LOADR DIRECTIVE. ANY ERROR IN EITHER WILL
0590*  CAUSE THE LOADER TO ABORT.
0591*
0592  006653 062714R STBND LDA BMES      SET FOR
0593  006654 006400        CLB            BASE PAGE BOUNDS
0594  006655 016736R       JSB STB      ENTER & PROCESS BOUNDS
0595  006656 026674R       JMP BPBE       ERROR RETURN
0596  006657 073455R       STA UBFWA    "A" = LOWER BP BOUND
0597  006660 077456R       STB UBLWA    "B" = UPPER BP BOUND
0598  006661 007004        CMB,INB      MAKE SURE BOUNDS ARE
0599  006662 046713R       ADB B1777      ON THE BASE PAGE
0600  006663 006020        SSB            ( < 2000B)
0601  006664 026674R       JMP BPBE       NO - ERROR
0602*
0603  006665 062725R STB1  LDA BMES1    SET FOR
0604  006666 006404        CLB,INB        MAIN PROGRAM BOUNDS
0605  006667 016736R       JSB STB      ENTER & PROCESS BOUNDS
0606  006670 026702R       JMP PBE        ERROR RETURN
0607  006671 073457R       STA UMFWA    "A" = LOWER MAIN PROG BOUND
0608  006672 077460R       STB UMLWA    "B" = UPPER MAIN PROG BOUND
0609  006673 026034R       JMP LOAD1    RETURN TO MAIN PROCESSING


0611* ERROR ROUTINES

0613  006674 062711R BPBE  LDA ERR18     BASE PAGE
0614  006675 016344R       JSB ERROR      BOUND ERROR - L18
0615  006676 000111        LDA BATCH    INPUT FROM
0616  006677 050112        CPA SYSTY      SYSTEM CONSOLE?
0617  006700 026653R       JMP STBND        YES - REENTER
0618  006701 026631R       JMP ABORT        NO  - ABORT

0620  006702 062712R PBE   LDA ERR19     MAIN PROGRAM
```

```
0621   06703 016344R        JSB ERROR        BOUND ERROR - L19
0622   06704 060111         LDA BATCH      INPUT FROM
0623   06705 050112         CPA SYSTY        SYSTEM CONSOLE?
0624   06706 026665R        JMP STB1           YES - REENTER
0625   06707 026631R        JMP ABORT          NO  - ABORT


0627* CONSTANTS,ETC, FOR PROGRAM BOUNDS ROUTINES

0629   06710 177720  NB60   OCT -60
0630   06711 030470  ERR18  ASC 1,18
0631   06712 030471  ERR19  ASC 1,19
0632   06713 001777  B1777  OCT 1777
0633   06714 006715R BMES   DEF *+1
0634   06715 041120         ASC 8,BP   BND (L,U)?
0635   06725 006726R BMES1  DEF *+1
0636   06726 050122         ASC 8,PROG BND (L,U)?
```

```
0038* ROUTINE TO ENTER TWO ASCII NUMBERS FROM THE BATCH
0039*  DEVICE AND CONVERT THEM TO OCTAL.
0040*
0041* UPON ENTRY:
0042*
0043*          "A" = BUFFER ADDRESS OF MESSAGE TO BE
0044*                OUTPUT IF BATCH IS SYSTEM CONSOLE
0045*          "B" = BASE PAGE/MAIN PROGRAM FLAG
0046*                0 => BASE PAGE
0047*                1 => MAIN PROGRAM
0048*
0049* ON EXIT:
0050*
0051*          P+1 : ERROR RETURN
0052*                     ILLEGAL OCTAL DIGIT
0053*                     LOWER > UPPER BOUND
0054*                     NUMBER > 5 DIGITS
0055*
0056*          P+2 : NORMAL RETURN
0057*                     "A" = LOWER BOUND
0058*                     "B" = UPPER BOUND
0059*
0060* PARAMETERS USED:
0061*
0062*          DATAB - INPUT BUFFER
0063*          PLIST - 3-WORD ASCII BUFFER FOR CONV
0064*          ID1   - POINTER INTO PLIST
0065*          ID2   - SUM FOR OCTAL NUMBER CONVERSION
0066*          ID3   - BASE PAGE/MAIN PROG FLAG
0067*          ID4   - LOWER BOUND
0068*          ID5   - LOWER/UPPER BOUND FLAG
0069*          ID6   - POINTER INTO DATAB
0070*          ID7   - UPPER/LOWER FLAG FOR DATAB
0001*          LST1  - UPPER/LOWER FLAG FOR PLIST
0002*          LST2  - IGNORE BLANKS FLAG
0003*
0004  06736 000000  STB   NOP
0005  06737 072755R       STA BBADD     STORE MESSAGE BUFFER ADDRESS
0006  06740 077312R       STB ID3       SAVE BP/MAIN PROG FLAG
0007*
0008  06741 060111  STB2  LDA BATCH     IF BATCH IS
0009  06742 050112        CPA SYSTY       SYSTEM CONSOLE, SET
0010  06743 033543R       IOR M400        ECHO BIT IN
0011  06744 073443R       STA TEMP        CONTROL WORD
0012  06745 060111        LDA BATCH     IF BATCH IS
0013  06746 050112        CPA SYSTY       NOT SYSTEMM CONSOLE,
0014  06747 002001        RSS             SKIP OUTPUTTING OF
0015  06750 026757R       JMP STB3        MESSAGE
0016*
0017  06751 016001X       JSB EXEC      OUTPUT MESSAGE TO SYSTEM CONSOLE
0018  06752 006757R       DEF *+5
0019  06753 000055        DEF .2
0020  06754 000054        DEF .1
0021  06755 000000  BBADD NOP           BUFFER ADDRESS STORED HERE
0022  06756 000063        DEF .8
0023*
```

```
0024  06757 016001X STB3  JSB EXEC       INPUT TWO ASCII NUMBERS
0025  06760 006765R       DEF *+5         INTO DATAB
0026  06761 000054        DEF .1
0027  06762 011443R       DEF TEMP
0028  06763 011206R       DEF DATAB
0029  06764 007426R       DEF N72
0030  06765 006003        SZA,RSS
0031  06766 026741R       JMP STB2        TRY AGAIN IF NO CHAR INPUT
0032  06767 007004        CMB,INB
0033  06770 076625R       STB NEGPM       SAVE -# CHARS INPUT
0034*
0035  06771 002400        CLA             SET FOR
0036  06772 073314R       STA ID5           LOWER BOUND
0037  06773 062273R       LDA DATB        START SCAN AT BEGINNING
0038  06774 073315R       STA ID6           OF DATAB
0039  06775 003400        CCA             SET UPPER/LOWER FLAG
0040  06776 073316R       STA ID7           TO UPPER
0041*
0042  06777 002400  STB4  CLA             CLEAR
0043  07000 072000R       STA PLIST         ASCII BUFFER
0044  07001 072001R       STA PLIST+1
0045  07002 072002R       STA PLIST+2
0046  07003 063563R       LDA PLAD        INITIALIZE ASCII
0047  07004 073310R       STA ID1           BUFFER POINTER
0048  07005 003400        CCA             SET UPPER/LOWER FLAG
0049  07006 073277R       STA LST1          TO UPPER
0050  07007 073300R       STA LST2        SET TO IGNORE BLANKS
0051*
0052  07010 067316R STB5  LDB ID7         GET CHARACTER
0053  07011 163315R       LDA ID6,I
0054  07012 006002        SZB
0055  07013 001727        ALF,ALF
0056  07014 010073        AND M177
0057  07015 007002        CMB,SZB
0058  07016 037315R       ISZ ID6
0059  07017 077316R       STB ID7         SET NEW UPPER/LOWER FLAG
0060*
0061  07020 053452R       CPA BLANK       IS IT A BLANK?
0062  07021 027060R       JMP PRBLN         YES - PROCESS BLANK
0063  07022 053535R       CPA COMMA       IS IT A COMMA?
0064  07023 027054R       JMP PRCMA         YES - PROCESS COMMA
0065*
0066  07024 066710R       LDB NB60        MAKE SURE VALID OCTAL DIGIT
0067  07025 044000        ADB A
0068  07026 006020        SSB
0069  07027 126736R       JMP STB,I        <60 ERROR
0070  07030 044043        ADB N8
0071  07031 006021        SSB,RSS
0072  07032 126736R       JMP STB,I        >67 ERROR
0073  07033 073300R       STA LST2        <ST2>0, SO DON'T IGNORE BLANKS
0074*
0075  07034 067277R       LDB LST1        STORE CHARACTER IN ASCII BUFFER
0076  07035 006002        SZB
0077  07036 001727        ALF,ALF          UPPER CHARACTER
0078  07037 133310R       IOR ID1,I
0079  07040 173310R       STA ID1,I
```

```
0080  07041 006002         SZB
0081  07042 027047R         JMP SCHK
0082  07043 063563R          LDA PLAD
0083  07044 040055          ADA .2
0084  07045 053310R         CPA ID1
0085  07046 126736R         JMP STB,I       6 DIGITS - ERROR
0086  07047 007002  SCHK    CMB,SZB
0087  07050 037310R         ISZ ID1
0088  07051 077277R         STB LST1
0089*
0090  07052 017067R         JSB DONE        DONE?
0091  07053 027010R         JMP STB5          NO- GET NEXT CHARACTER
0092*
0093  07054 003400  PRCMA    CCA             SET TO
0094  07055 073300R         STA LST2          IGNORE BLANKS
0095  07056 017067R         JSB DONE        DONE?
0096  07057 027065R         JMP PRN           NO- CONVERT # & CONTINUE
0097*
0098  07060 063300R PRBLN    LDA LST2        IGNORE
0099  07061 002021          SSA,RSS           BLANKS ?
0100  07062 027065R         JMP PRN             NO - CONVERT #
0101  07063 017067R         JSB DONE            YES- DONE?
0102  07064 027010R         JMP STB5                  NO- GET NEXT CHAR
0103*
0104  07065 017100R PRN      JSB CONV        CONVERT ASCIII TO OCTAL
0105  07066 026777R         JMP STB4          RETURN IF 2ND  NUMBER NEEDED



0107* ROUTINE TO TEST WHETHER OR NOT ALL CHARACTERS
0108*  INPUT HAVE BEEN PROCESSED
0109*
0110*  RETURN:      P+1 - MORE CHARACTERS TO PROCESS
0111*  NO RETURN IF ALL CHARACTERS HAVE BEEN PROCESSED,
0112*             NUMBER IN ASCII BUFFER WILL BE CONVERTED,
0113*             IF ONLY ONE NUMBER HAS BEEN ENTERED,
0114*             2ND NUMBER WILL BE DEFAULT VALUE,
0115*
0116  07067 000000  DONE    NOP
0117  07070 036625R         ISZ NEGPM       MORE CHARACTERS?
0118  07071 127067R         JMP DONE,I        YES- CONTINUE
0119  07072 017100R DONE1   JSB CONV        CONVERT # IN ASCII BUFFER
0120  07073 002400          CLA             RETURN IF 2ND NUMBER NEEDED
0121  07074 072000R         STA PLIST        CLEAR BUFFER FOR
0122  07075 072001R         STA PLIST+1      DEFAULT VALUE
0123  07076 072002R         STA PLIST+2
0124  07077 027072R         JMP DONE1       CONVERT 2ND NUMBER



0126* ROUTINE TO CONVERT NUMBER IN ASCII BUFFER TO OCTAL,
0127*  INPUT IS TERMINATED BY A NULL.  IF VALUE=0,
0128*  THE SYSTEM DEFAULT VALUE IS ASSUMED,
0129*  THE FIRST TIME THIS ROUTINE IS CALLED, IT CONVERTS
0130*  THE LOWER BOUND, SAVES IT AND RETURNS, THE SECOND
0131*  TIME, IT CONVERTS THE UPPER BOUND, THEN SETS
```

```
0132*
0133*          "A" = LOWER BOUND
0134*          "B" = UPPER BOUND
0135*  AND RETURNS TO P+2 OF STB ROUTINE.
0136*
0137  07100 000000  CONV   NOP
0138  07101 063563R        LDA PLAD       INITIALIZE ASCII BUFFER
0139  07102 073310R        STA ID1          POINTER
0140  07103 006400         CLB            INITIALIZE OCTAL
0141  07104 077311R        STB ID2          SUM TO ZERO
0142*
0143  07105 163310R CONV1  LDA ID1,I      GET 1ST CHAR
0144  07106 001727         ALF,ALF
0145  07107 010073         AND M177
0146  07110 017116R        JSB CON          CONVERT IT
0147  07111 163310R        LDA ID1,I      GET 2ND CHAR
0148  07112 010073         AND M177
0149  07113 017116R        JSB CON          CONVERT IT
0150  07114 037310R        ISZ ID1        SET FOR NEXT WORD
0151  07115 027105R        JMP CONV1


0153  07116 000000  CON    NOP
0154  07117 002003         SZA,RSS        IS CHAR NULL?
0155  07120 027130R        JMP CONV2        YES - INPUT TERMINATED
0156  07121 010062         AND ,7          N- MASK OFF 60B
0157*
0158  07122 067311R        LDB ID2        UPDATE OCTAL SUM
0159  07123 005222         RBL,RBL
0160  07124 005200         RBL
0161  07125 044000         ADB A
0162  07126 077311R        STB ID2
0163  07127 127116R        JMP CON,I
0164*
0165  07130 006002  CONV2  SZB            DEFAULT BOUNDS NECESSARY?
0166  07131 027160R        JMP CONV3        NO- BET GIVEN BOUNDS
0167*
0168  07132 063314R        LDA ID5        PROCESSING
0169  07133 002002         SZA              LOWER BOUND?
0170  07134 027144R        JMP UPPR         NO - UPPER
0171  07135 064255         LDB SBFWA      SET FOR BASE PAGE LOWER
0172  07136 063312R        LDA ID3        IS IT FOR
0173  07137 002002         SZA              BASE PAGE?
0174  07140 064254         LDB SMFWA        NO - CHANGE TO MAIN PRG LOWER
0175  07141 077313R LWR    STB ID4        SAVE LOWER BOUND
0176  07142 077314R        STB ID5        SET FOR UPPER BOUND NEXT
0177  07143 127100R        JMP CONV,I     RETURN
0178*
0179  07144 064256  UPPR   LDB SBLWA      SET FOR BASE PAGE UPPER
0180  07145 063312R        LDA ID3        IS IT FOR BASEE PAGE?
0181  07146 002002         SZA
0182  07147 064100         LDB SMLWA        NO  - CHANGE TO MAIN PROG UPPE
0183*
0184  07150 063313R UPPR1   LDA ID4         MAKE SURE LOWER <= UPPER
0185  07151 003004          CMA,INA
0186  07152 040001         ADA B
```

```
0187  07153 002020          SSA
0188  07154 126736R        JMP STB,I        NO - ERROR RETURN
0189*
0190  07155 063313R        LDA ID4          "A" = LOWER BOUND
0191  07156 036736R        ISZ STB          "B" = UPPER BOUND
0192  07157 126736R        JMP STB,I        RETURN TO P+2 OF STB
0193*
0194  07160 063314R CONV3  LDA ID5          IS THIS FOR LOWER BOUND?
0195  07161 002002          SZA
0196  07162 027150R        JMP UPPR1          NO
0197  07163 027141R        JMP LWR            YES
```

```
0199*
0200*  THE FOLLOWING ROUTINES LINK A PROGRAM THROUGH
0201*   CURRENT PAGE LINKS.
0202*
0203*      ALINK -  CALLED AFTER NAM RECORD IS READ,
0204*               DETERMINES WHETHER OR NOT CURRENT
0205*               PAGE LINKS ARE TO BE USED, SETS UP
0206*               LOW LINK AREA (BOTH INITIAL GUESS &
0207*               FIXED LENGTH FOLLOWING PASS 1)
0208*
0209*      BLINK -  CALLED AFTER END RECORD IS READ,
0210*               IF UPPER LINK AREA IS PRESENT, IT IS
0211*               OUTPUT TO THE DISC.
0212*
0213*      DLINK -  CALLED FROM BPSCN AFTER FAILING TO
0214*               FIND DESIRED LINK IN BASE PAGE, BUT
0215*               PRIOR TO ALLOCATING A NEW BASE PAGE
0216*               LINK. IF NO CURRENT PAGE LINK IS POS-
0217*               SIBLE, RETURN IS MADE TO P+1 & A BP
0218*               LINK IS ALLOCATED. IF A CURRENT PAGE
0219*               LINK IS POSSIBLE, IT IS CREATED &
0220*               RETURN IS MADE TO LINKC+1.
0221*
0222*      CROSS -  CALLED FROM DLINK WHEN A PAGE
0223*               BOUNDARY IS CROSSED OR FROM END
0224*               RECORD DETECTED BEFORE PASS 3. FIRST
0225*               PAGE CROSSING SETS FOR PASS 2 & FIXES
0226*               LENGTH OF LOW LINK AREA. SECOND PAGE
0227*               CROSSING SETS FOR PASS 3 & OUTPUTS
0228*               LOW LINK AREA TO DISC. THIRD PAGE
0229*               CROSSING RESULTS IN DEFAULTING LINK
0230*               TO BASE PAGE.
0231*


0233  07164 000000  ALINK NOP
0234  07165 063417R       LDA L01        CURRENT PAGE
0235  07166 002020        SSA              LINKS POSSIBLE?
0236  07167 127164R       JMP ALINK,I        NO- RETURN
0237  07170 002002        SZA                YES - PASS 3?
0238  07171 027243R       JMP PS3              YES - SET LOW LINK POINTER

0240  07172 063416R       LDA L001       PASS 1 - FOR LOW LINK
0241  07173 002002        SZA              AREA GUESS?
0242  07174 027233R       JMP PS2            NO - PASS 2 FOR FIXED LOW LNK

0244  07175 063415R       LDA CPL        CURRENT PAGE LINKS REQUESTED
0245  07176 002003        SZA,RSS          IN CALLING SEQUENCE?
0246  07177 027231R       JMP NCPL           NO - SET L01 < 0 FOR NO CPL

0248  07200 063602R       LDA TPREL      GET ADDRESS
0249  07201 070001        STA B            OF LAST WORD
0250  07202 033443R       IOR O1777        OF PAGE
0251*
0252  07203 007004        CMB,INB        COMPUTE #
0253  07204 006004        INB              WORDS
```

```
0254  07205 044000          ADB A             REMAINING
0255  07206 077410R         STB TEMP2         ON PAGE
0256*
0257  07207 063420R         LDA PLGTH       COMPUTE # WORDS
0258  07210 001265          RAL,CLE,ERA       OF PROGRAM
0259  07211 007004          CMB,INB           THAT FALL
0260  07212 044000          ADB A             BEYOND THIS
0261  07213 077407R         STB TEMP1         PAGE
0262*
0263  07214 006020          SSB             IF PROGRAM FITS ON ONE PAGE
0264  07215 027231R         JMP NCPL          CURRENT PAGE LINKS ARE NOT
0265  07216 006003          SZB,RSS           REQUIRED.
0266  07217 027231R         JMP NCPL
0267*
0268  07220 063410R         LDA TEMP2       COMPUTE MINIMUM OF:
0269  07221 001100          ARS               HALF # WORDS OF PROGRAM
0270  07222 007004          CMB,INB           ON CURRENT PAGE -OR-
0271  07223 044000          ADB A             # WORDS OF PROGRAM
0272  07224 006021          SSB,RSS           ON NEXT PAGE
0273*
0274  07225 063407R         LDA TEMP1       DIVIDE THIS
0275  07226 001121          ARS,ARS           MINIMUM BY FOUR
0276  07227 002002          SZA             IF NON-ZERO,USE AS SIZE OF LOW
0277  07230 027234R         JMP PS1           LINK AREA. IF EQUAL TO ZERO,

0279  07231 003400  NCPL    CCA             SET L01 < 0 TO INDICATE
0280  07232 027026R         JMP LOADX         NO CURRENT PAGE LINKS

0282  07233 063412R PS2     LDA LWH2        PASS 2 - FIXED LENGTH OF LOW LNK
0283  07234 067602R PS1     LDB TPREL       SET NEW:
0284  07235 077407R         STB TEMP1         LOW LIMIT OF LOW LINK AREA
0285  07236 044000          ADB A               (ADD LENGTH OF LINK AREA)
0286  07237 077602R         STB TPREL         LOAD ADDRESS
0287  07240 077423R         STB CPMAX         UPPER LIMIT OF LOW LINK AREA
0288  07241 003004          CMA,INA         SAVE NEGATIVE LENGTH OF LINK
0289  07242 073412R         STA LWH2          AREA FOR OUTPUT TO DISC (BLIN0

0291  07243 063407R PS3     LDA TEMP1       SET UP POINTERS
0292  07244 073422R         STA CPLOC         FOR LOW LINK AREA
0293  07245 073421R         STA CPBAS
0294  07246 013445R         AND M0760
0295  07247 073424R         STA CPADD       GET CURRENT PAGE ADDRESS
0296  07250 127164R         JMP ALINK,I
```

```
0298  07251 000000  DLINK NOP
0299  07252 062601R        LDA BPSCN      WAS CALL FROM
0300  07253 053420R        CPA CLINK        DBLBPROCESSOR?
0301  07254 002001         RSS
0302  07255 127251R        JMP DLINK,I      NO - USE BASE PAGE LINK
0303  07256 063417R        LDA L01        USING CURRENT
0304  07257 002020         SSA              PAGE LINKS?
0305  07260 127251R        JMP DLINK,I      NO - USE BASE PAGE LINK

0307  07261 063424R SETL   LDA CPADD      GET LINK PAGE
0308  07262 053411R        CPA PAGNO      SAME AS INSTRUCTION PAGE?
0309  07263 002001         RSS
0310  07264 027316R        JMP CROSS       NO - PAGE BOUNDARY CROSSING

0312  07265 063276R        LDA PLST       SET TO
0313  07266 073355R        STA BLINK        BOTTOM OF LINK AREA
0314  07267 067421R        LDB CPBAS      GET NUMBER OF CURRENT PAGE LINKS
0315  07270 007004         CMB,INB          ALLOCATED SO FAR.  IF ZERO,
0316  07271 047422R        ADB CPLOC        JUMP TO ALLOCATE.
0317  07272 007007         CMB,INB,SZB,RSS
0318  07273 027302R        JMP DLIN1
0319  07274 163355R DLIN2  LDA BLINK,I    IF NOT ZERO, SCAN CURRENT PAGE
0320  07275 053410R        CPA OPRND        LINKS PRESENT FOR POSS. MATCH
0321  07276 027302R        JMP DLIN1         MATCH FOUND- RETURN ADDRESS
0322  07277 037355R        ISZ BLINK         MATCH NOT FOUND- CONTINUE
0323  07300 006006         INB,SZB            SEARCHING THROUGH LINKS
0324  07301 027274R        JMP DLIN2

0326  07302 063355R DLIN1  LDA BLINK      MAKE SURE CORE BUFFER DOESN'T
0327  07303 053306R        CPA PIDNT        OVERFLOW INTO ID TABLE
0328  07304 127251R        JMP DLINK,I      YES : USE BP LINKS
0329  07305 063422R        LDA CPLOC      GET NEXT AVAIL LINK LOC
0330  07306 040001         ADA B           ADD OFFSET IN CASE NOT NEW LINK
0331  07307 053423R        CPA CPMAX      OVERFLOW LINK AREA?
0332  07310 127251R        JMP DLINK,I     YES- MUST USE BP LINK
0333  07311 006003         SZB,RSS        IF NEW LINK, INCREMENT THE
0334  07312 037422R        ISZ CPLOC        LOCATION COUNTER
0335  07313 067410R        LDB OPRND      GET THE LINK WORD
0336  07314 177355R        STB BLINK,I    SET IN THE LINK AREA
0337  07315 026106R        JMP LINKC+1    RETURN TO DBL PROCESSING


0339  07316 063417R CROSS  LDA L01        PASS 3?
0340  07317 002002         SZA
0341  07320 027331R        JMP BLIN3       YES-ASSIGN UPPR LINK OR RETURN

0343  07321 063416R        LDA L001       PASS 1?
0344  07322 002003         SZA,RSS
0345  07323 027347R        JMP FLLA        YES-FIX LOW LINK AREA

0347  07324 063412R        LDA LWH2       IF LENGTH OF LOW LINK AREA IS
0348  07325 002002         SZA              GREATER THAN ZERO,
0349  07326 017372R        JSB BLIN0        OUTPUT IT TO DISC
0350  07327 002404  BLIN2  CLA,INA        SET FOR PASS 3
0351  07330 027026R        JMP LOADX        AND GO
```

```
0353  07331 002001  BLIN3 RSS           SKIP THE 1ST TIME THROUGH, THEN
0354  07332 127251R       JMP DLINK,I    RSS CHANGED TO NOP = (BP LINKS)

0356  07333 063420R       LDA PLGTH      COMPUTE
0357  07334 001265        RAL,CLE,ERA
0358  07335 043602R       ADA TPREL
0359  07336 073422R       STA CPLOC
0360  07337 073421R       STA CPBAS        LOW BOUND OF UPPER LINK AREA
0361  07340 013445R       AND M0760
0362  07341 073424R       STA CPADD        CURRENT PAGE ADDRESS
0363  07342 043444R       ADA M2000
0364  07343 073423R       STA CPMAX        UPPER BOUND OF UPPER LINK AREA
0365  07344 002400        CLA            CLEAR BLIN3, SO SUBSEQUENT PAGE
0366  07345 073331R       STA BLIN3        CROSSINGS WILL USE BP LINKS
0367  07346 027261R       JMP SETL       RETURN TO ALLOCATE CP LINK

0369  07347 063407R FLLA  LDA TEMP1      COMPUTE # LINKS ACTUALLY USED IN
0370  07350 003004        CMA,INA          LOW LINK AREA, & SAVE FOR
0371  07351 043422R       ADA CPLOC        FIXED LENGTH.
0372  07352 073412R       STA LWH2
0373  07353 002404        CLA,INA        SET FOR PASS 2
0374  07354 027011R       JMP LD3          AND GO



0376  07355 000000  BLINK NOP
0377  07356 037411R       ISZ LWH1       IF FROM END RECORD BEFORE PASS 3
0378  07357 127355R       JMP BLINK,I      NO UPPER LINK AREA, RETURN

0380  07360 063422R       LDA CPLOC      COMPUTE NEGATIVE #
0381  07361 003004        CMA,INA          OF WORDS IN UPPER LINK AREA,
0382  07362 043602R       ADA TPREL        (TPREL IS AT END OF CURRENT
0383  07363 073412R       STA LWH2           PROGRAM)
0384  07364 002003        SZA,RSS        IF LENGTH = 0, DON'T
0385  07365 127355R       JMP BLINK,I      OUTPUT
0386  07366 017372R       JSB BLIN0      OTHERWISE) OUTPUT UPPER LINK2

0388  07367 063422R       LDA CPLOC      ADJUST NEW RELOCATION ADDRESS TO
0389  07370 073602R       STA TPREL        BEYOND UPPER LINK AREA
0390  07371 127355R       JMP BLINK,I



0392  07372 000000  BLIN0 NOP
0393  07373 063276R       LDA PLST       SET POINTER TO START
0394  07374 073164R       STA ALINK        OF LINK BUFFER
0395  07375 067421R       LDB CPBAS      SET POINTER TO START OF
0396  07376 077425R       STB MAXC         CORE LOCATION
0397*
0398  07377 163164R BLIN1 LDA ALINK,I    GET THE LINK WORD
0399  07400 067425R       LDB MAXC       OUTPUT LINK TO
0400  07401 017705R       JSB LABDO        DISC BUFFER
0401  07402 037425R       ISZ MAXC       INCREMENT CORE ADDR POINTER
0402  07403 037164R       ISZ ALINK      INCREMENT LINK BUFFER POINTER
0403  07404 037412R       ISZ LWH2       LWH2 = - # WORDS IN BUFFER
0404  07405 027377R       JMP BLIN1      MORE TO OUTPUT
0405  07406 127372R       JMP BLIN0,I    DONE
```

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0407  07407 000000  TEMP1 NOP            LOW BOUND OF LOW LINK AREA
0408  07410 000000  TEMP2 NOP            TEMPORARY
0409  07411 000000  LWH1  NOP            UPPER LINK AREA PRESENT FLAG
0410  07412 000000  LWH2  NOP            LENGTH OF CURRENT PAGE LINK AREA
0411  07413 000000  LWH3  NOP            HOLDS ORIGINAL TBREL
0412  07414 000000  LWH4  NOP            HOLDS ORIGINAL TPREL
0413  07415 000000  CPL   NOP            CURRENT PAGE LINK FLAG =0,CP LNK
0414  07416 000000  L001  NOP            PASS 1/2  FLAG
0415  07417 000000  L01   NOP            PASS 3    FLAG
0416  07420 004105R CLINK DEF LINKC
0417  07421 000000  CPBAS NOP            LOW BOUND OF CURRENT PAGE BUFFER
0418  07422 000000  CPLOC NOP            CURRENT POINTER IN CP BUFFER
0419  07423 000000  CPMAX NOP            UPPER BND OF CURRENT PAGE BUFFER
0420  07424 000000  CPADD NOP            CURRENT PAGE ADDRESS OF BUFFER
0421  07425 000000  MAXC  NOP            MAX RELOCATION ADDRESS
```

```
0423  07426 177670  N72    DEC -72
0424  07427 177755  N19    DEC -19
0425  07430 177756  N18    DEC -18
0426  07431 000013  .11    DEC 11
0427  07432 000014  .12    DEC 12
0428  07433 000016  .14    DEC 14
0429  07434 000020  .16    DEC 16
0430  07435 000022  .18    DEC 18
0431  07436 000044  .36    DEC 36
0432  07437 000177  .127   DEC 127
0433  07440 000600  M600   OCT 600
0434  07441 000700  M700   OCT 700
0435  07442 001100  M1100  OCT 1100
0436  07443 001777  01777  OCT 1777
0437  07444 002000  M2000  OCT 2000
0438  07445 076000  M0760  OCT 076000
0439  07446 174000  M1740  OCT 174000
0440  07447 100000  MSIGN  OCT 100000
0441  07450 020052  BLAST  OCT 20052
0442  07451 020040  BLNKS  OCT 20040
0443  07452 000040  BLANK  OCT 40
0444  07453 020000  UBLNK  OCT 20000
0445*
0446  07454 027505  SLSHE  ASC 1,/E       CONTROL PARAMETER TERMINATOR
0447  07455 007456R DADRR  DEF *+1
0448  07456 022104  $DBP1  ASC 2,$DBP     $DBP1
0449  07460 030400         OCT 030400
0450  07461 042105  CHRDE  ASC 2,DEBU    DEBUG
0451  07463 043400         OCT 043400
0452  07464 022104  $DBP2  ASC 2,$DBP    $DBP2
0453  07466 031000         OCT 031000
0454  07467 022115  $MEMR  ASC 2,$MEM    $MEMR
0455  07471 051000         OCT 051000
0456  07472 042102  CHRDB  ASC 2,DBKP    DBKPT
0457  07474 052000         OCT 052000
0458  07475 042530  AEXEC  ASC 2,EXEC
0459  07477 020000         OCT 020000
0460  07500 007501R DOSHD  DEF *+1
0461  07501 051105         ASC 9,RELOCATING LOADER
0462  07512 007513R NAENT  DEF *+1
0463  07513 047101         ASC 18,NAME        PROG BOUNDS    BP BOUNDS
0464*
0465  07535 000054  COMMA  OCT 54          COMMA
0466  07536 000050  LPARN  OCT 50          LEFT PARENTHESIS
0467  07537 000051  RPARN  OCT 51          RIGHT PARENTHESIS
0468  07540 000060  M60    OCT 60
0469  07541 000200  M200   OCT 200
0470  07542 000300  M300   OCT 300
0471  07543 000400  M400   OCT 400
0472  07544 177600  M7600  OCT 177600
0473  07545 000071  D57    DEC 57
0474  07546 177600  N128   DEC -128
0475  07547 000200  .128   DEC 128
0476*
0477  07550 007606R ADBUF  DEF DBUF      ADDRESS OF DBUF BUFFER
0478  07551 010006R AIBUF  DEF IBUF
```

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0479   07552 010206R ALBUF DEF LBUF
0480   07553 011257R AMEM5 DEF MLIST+5
0481   07554 011262R AMEM8 DEF MLIST+8
0482   07555 011266R AME12 DEF MLIST+12
0483   07556 011271R AME15 DEF MLIST+15
0484   07557 011252R AMLST DEF MLIST
0485   07560 000157  DFUTS DEF UDNTS
0486   07561 000160  DFSTS DEF SYNTS
0487   07562 000214R DFPBF DEF PBUF       ADDRESS OF NAME BUFFER
0488   07563 000000R PLAD  DEF PLIST
0489*
0490   07564 007565R OPWRS DEF *+1
0491   07565 010000        OCT 10000
0492   07566 001000        OCT 1000
0493   07567 000100        OCT 100
0494   07570 000010        OCT 10
0495   07571 000001        OCT 1
0496*
0497   07572 007573R DPWRS DEF *+1
0498   07573 023420        DEC 10000
0499   07574 001750        DEC 1000
0500   07575 000144        DEC 100
0501   07576 000012        DEC 10
0502   07577 000001        DEC 1
0503*
0504   07600 007601R RBTAD DEF *+1       RELOCATION BASE TABLE
0505   07601 000000        OCT 0         ABSOLUTE PROGRAM BASE
0506   07602 000000  TPREL  OCT 0         CURRENT PROGRAM BASE
0507   07603 000000        OCT 0         BP RELOCATION ADDRESS
0508   07604 000000  COMAD OCT 0         CURRENT COMMON RELOCATION BASE
0509   07605 000000        OCT 0          ABSOLUTE
0510*
0511   07606 000000  DBUF  BSS 128        RELOCATABLE DISC INPUT BUFFER
0512   10006 000000  IBUF  BSS 128        ID SEGMENT BUFFER
0513   10206 000000  LBUF  BSS 512
0514   00000         PLIST EQU LOADR      PUT 128 WD BUFFER AT START OF LO
0515   11206 000000  DATAB BSS 36         PARAMETER INPUT BUFFER
0516   11252 000000  MLIST BSS 18         MEMORY MAP BUFFER
0517   00210         TBUF  EQU LOADR+136   TEMP BUFFER
0518   00214         PBUF  EQU LOADR+140
0519*
0520   11274 000000  BLST  NOP            LOADER SYMBOL TABLE ADDRESS
0521   11275 000000  TLST  NOP            CURRENT LST ADDRESS
0522   11276 000000  PLST  NOP            END LST ADDRESS
0523*
0524   11277 000000  LST1  NOP            LST NAME 1,2
0525   11300 000000  LST2  NOP            LST NAME 3,4
0526   11301 000000  LST3  NOP            LST NAME 5 ; ORDINAL
0527   11302 000000  LST4  NOP            PROGRAM IDENT ADDRESS
0528   11303 000000  LST5  NOP            BASE PAGE LINK ADDRESS
0529*
0530   11304 000000  BIDNT NOP            PROGRAM NAME TABLE ADDRESS
0531   11305 000000  TIDNT NOP            CURRENT IDENT ADDRESS
0532   11306 000000  PIDNT NOP            END IDENT ADDRESS
0533   11307 000000  CIDNT NOP            WORKING IDENT ADDRESS
0534*
```

```
0535   11310 000000  ID1    NOP          IDENT NAME 1,2
0536   11311 000000  ID2    NOP          IDENT NAME 3,4
0537   11312 000000  ID3    NOP          IDENT NAME 5 ; USEAGE FLAG
0538   11313 000000  ID4    NOP          IDENT COMMON LENGTH
0539   11314 000000  ID5    NOP          IDENT DISC ADDRESS
0540   11315 000000  ID6    NOP          (15)=MAIN/SUBROUTINE; (6-0)=TYPE
0541   11316 000000  ID7    NOP          DISC LENGTH; MAIN IDENT FOR SEGM
0542*
0543   11317 000000  ABSID  NOP         IDENT ADDR FOR NEXT SEGMENT SCAN
0544   11320 000000  AMAD   NOP         CURRENT MLIST ADDRESS
0545*
0546   11321 000000  BPEND  NOP          END OF BASE PAGE BUFFER
0547   11322 000000  BP#    NOP          # OF BASE PAGE LINK WORDS
0548   11323 000000  BSBAD  NOP         SEGMENT BP RELOC ADDR
0549   11324 000000  BSPAD  NOP         SEGMENT PROG RELOC ADDR
0550   11325 000000  BSSDP  NOP         INITIAL DISC RES BSS DISPLACEMENT
0551   11326 000000  BTRSC  NOP          CURRENT UTIL PROG T/S ADDRESS
0552   11327 000000  BGBND  NOP         USER PROG BOUNDARY
0553   11330 000000  BPOIT  NOP          NEG OF BP STARTING ADDRESS
0554*
0555   11331 000000  CBASE  NOP         CURRENT BASE PROGRAM ADDRESS
0556   11332 000000  CLXXX  NOP
0557   11333 000000  CNFLG  NOP          TEMPORARY FLAG
0558   11334 000000  COUNT  NOP          # OF BINARY SECTOR COUNTER
0559   11335 000000  CURAD  NOP         CURRENT DBUF ADDRRSS
0560   11336 000000  CURAI  NOP         CURRENT IBUF ADDRESS
0561   11337 000000  CURAL  NOP         CURRENT LBUF ADDRESS
0562   11340 000000  CURAP  NOP         CURRENT PLIST ADDRESS
0563   11341 000000  CURAT  NOP         CURRENT TBUF ADDRESS
0564*
0565   11342 000000  DBASE  NOP         CURRENT BASE DISC ADDRESS
0566   11343 000000  DBFLG  NOP          NO DEBUG/DEBUG OPTION
0567   11344 000000  DBFL2  NOP          DEBUG IN LST FLAG
0568   11345 000000  DBLAD  NOP         CURRENT DBL ADDRESS
0569   11346 000000  DBUGF  NOP         SPECIAL DEBUG ENTRY DEBUG FLAG
0570   11347 000000  DCNT   NOP         CURRENT DBUF COUNT
0571   11350 000000  DCRNT  NOP         CURRENT STORE DISC ADDRESS
0572   11351 000000  DISCX  NOP          WHICH DISC? FLAG
0573   11352 000000  DSKAB  NOP          STARTING ABS PROG DISC ADDRESS
0574   11353 000000  DSKAD  NOP          CURRENT DISC ADDRESS
0575   11354 000000  DSKBR  NOP         CURRENT MAIN DISC RES DISC ADDR
0576   11355 000000  DSKBS  NOP         DISC ADDR OF MAIN DISC RES BP
0577   11356 000000  DSKID  NOP          ID SEGMENT DISC ADDRESS
0578   11357 000000  DSKMN  NOP         INITIAL MAIN DISC ADDRESS
0579   11360 000000  DSKRD  NOP         DISC INPUT ADDRESS
0580   11361 000000  DSKSS  NOP          BINARY SCRATCH ADDRESS
0581   11362 000000  DSKTM  NOP          TEMPORARY DISC ADDRESS
0582   11363 000000  DSK01  NOP
0583   11364 000000  DSK02  NOP
0584   11365 000000  DSKUD  NOP
0585   11366 000000  DSCNT  NOP          # SECTORS FOR CURRENT PROGRAM
0586*
0587   11367 000000  ETFLG  NOP          END OF TAPE FLAG
0588   11370 000000  EXCNT  NOP          TEMPORARY COUNTER
0589   11371 000000  EXORD  NOP         EXTERNAL ORDINAL
0590*
```

```
0591  11372 000000  FIOPT NOP          FILE SEARCH OPTION
0592  11373 000000  HDFLG NOP          HEADING FORMAT FLAG
0593*
0594  11374 000000  ICNT  NOP          CURRENT IBUF COUNT
0595  11375 000000  IDMBS NOP          USER MAIN ADDR FOR SEGMENT REF
0596  11376 177777  IGNOR DEC -1        LOADING/NOT LOADING FLAG
0597  11377 000000  IMAIN NOP           MAIN PROG IDENT ADDRESS
0598  11400 000000  INSCN NOP          INSTRUCTION TYPE COUNTER
0599  11401 000000  INSTR NOP          CURRENT INSTRUCTION
0600  11402 000000  LCNT  NOP          CURRENT LBUF COUNT
0601  11403 000000  LDING NOP          PROGRAMS LOADING FLAG
0602  11404 000000  LOWER NOP          LOWER BP LST BOUND
0603  11405 000000  MAXAD NOP          CURRENT MAX PROG LOAD ADDRESS
0604*
0605  11406 000000  NBPBF NOP          NEG BASE PAGE BUFFER ADDRESS
0606  11407 000000  NXFLG NOP           ENT/EXT FLAG
0607*
0608  11410 000000  OPRND NOP          CURRENT OPERAND
0609*
0610  11411 000000  PAGNO NOP          CURRENT PAGE NO.
0611  11412 000000  PBREL NOP          INITIAL BP RELOCA ADDR
0612  11413 000000  PCNTT NOP           PROGRAM NAME COUNTER
0613  11414 000000  PGCNT NOP          # PROGRAMS LOADED COUNTER
0614  11415 000000  PGMIN NOP           INPUT UNIT (SECONDARY)
0615  11416 000000  PLCNT NOP          CURRENT PLOST COUNT
0616  11417 000000  PLFLG NOP           TEMPORARY FLAG
0617  11420 000000  PLGTH NOP          PROGRAM LENGTH
0618  11421 000000  PLMAN NOP          CURRENT MAIN PLIST ADDRESS
0619  11422 000000  PPREL NOP          INITIAL PROG RELOC ADDR
0620  11423 000000  PRENT NOP          PRIMARY ENTRY POINT
0621  11424 000000  PTYPE NOP          CURRENT PROGRAM TYPE
0622*
0623  11425 000000  RANAD NOP          CURRENT POWER RANGE ADDRESS
0624  11426 000000  RELAD NOP          CURRENT CORE RELOCATION ADDRESS
0625  11427 000000  REKEY NOP          INSTRUCTION TYKPE BYTE
0626  11430 000000  RIC   NOP           RECORD ID CODE
0627  11431 000000  RLGTH NOP           RELOCATABLE UTIL REC LENGTH
0628*
0629  11432 000000  SAVSS NOP           SAVE SS FLAG
0630  11433 000000  SYM12 NOP           SYMBOL ADDRESS 1
0631  11434 000000  SYM34 NOP           SYMBOL ADDRESS 2
0632  11435 000000  SYM5  NOP           SYMBOL ADDRESS 3
0633*
0634  11436 000000  TABS  NOP          ABSOLUTE WORD
0635  11437 000000  TADR  NOP          ABSOLUTER ADDRESS
0636  11440 000000  TBREL NOP          CURRENT BP RELOC ADDR
0637  11441 000000  TCNT  NOP          CURRENT TBUF COUNT
0638  11442 000000  TDIR  NOP          BINARY READ DIRECTION FLAG
0639  11443 000000  TEMP  NOP           TEMPORARY
0640  11444 000000  TERMN NOP           TERMINATOR FLAG
0641  11445 000000  TNEXT NOP          NEXT TRACK SECTOR ADDRESS
0642  11446 000000  TTYNO NOP           TTY #
0643  11447 000000  TWORD NOP          WORD IN BUFFER ADDRESS
0644*
0645  11450 000000  UPPER NOP          UPPER BP LST BOUND
0646  11451 000000  UTCNT NOP           # OF UTIL RECORDS LEFT (-)
```

```
0647   11452 000000  UTRSC NOP           CERRENT UTIL REC T/S ADDRESS
0648*
0649   11453 000000  WDCNT NOP           TEMPORARY COUNTER
0650*
0651   11454 000000  XPREL NOP           TEMPORARY COUNTER
0652*
0653   11455 000000  UBFWA NOP           LOWER BASE PAGE BOUND
0654   11456 000000  UBLWA NOP           UPPER BASE PAGE BOUND
0655   11457 000000  UMFWA NOP           LOWER MAIN PROG BOUND
0656   11460 000000  UMLWA NOP           UPPER MAIN PROG BOUND
0657   11461 000000  DVR   NOP           DEVICE DRIVER FLAG



0659   11462 000606  LISTU OCT 606       LIST OUTPUT UNIT
0660   11463 000000  ZBUF  BSS 3        CURRENT PROGRAM NAME BUFFER
0661   11466 030061  ERR01 ASC 1,01      CHECKSUM ERROR
0662   11467 030062  ERR02 ASC 1,02      ILLEGAL RECORD
0663   11470 030063  ERR03 ASC 1,03      MEMORY OVERFLOW
0664   11471 030064  ERR04 ASC 1,04      LINKAGE AREA OVERFLOW
0665   11472 030065  ERR05 ASC 1,05      LOADER SYMBOL TABLE OVERFLOW
0666   11473 030066  ERR06 ASC 1,06      DUPLICATE PROGRAM NAMES
0667   11474 030067  ERR07 ASC 1,07      DUPLICATE ENTRY POINTS
0668   11475 030070  ERR08 ASC 1,08      NO TRANSFER ADDRESS PRESENT
0669   11476 030071  ERR09 ASC 1,09      RECORD OUT OF SEQUENCE
0670   11477 030460  ERR10 ASC 1,10
0671   11500 030461  ERR11 ASC 1,11      PROGRAM IDENT TABLE OVERFLOW
0672   11501 030462  ERR12 ASC 1,12     SPECIFIED USER FILE NOT IN DIRECT
0673   11502 030463  ERR13 ASC 1,13      DUPL PROGRAM NAME
0674   11503 030464  ERR14 ASC 1,14      NON-ZERO BASE PAGE LENGTH
0675   11504 030465  ERR15 ASC 1,15      SEGMENT LOADED BEFORE MAIN.
0676   11505 030466  ERR16 ASC 1,16      PROGRAM OVERLAY
0677   11506 047117  ASCNO ASC 1,NO
0678   11507 000331  XSSFL DEF SSFLG     ADDRESS OF SS FLAG IN BASE PAGE
0679   11510 011511R BPBUF DEF BPAGE     ADDR OF BASE PAGE BUFFER
0680   11511         BPAGE BSS 0         BEGINNING OF BASE PAGE BUFFER
```

```
0682  00000          A      EQU 0          A REGISTER
0683  00001          B      EQU 1          B REGISTER
0684  00100          .      EQU 100B
0685  00053          ..     EQU 53B
0686  00041          N10    EQU ..-10      DEC  -10
0687  00042          N9     EQU ..-9       DEC  -9
0688  00043          N8     EQU ..-8       DEC  -8
0689  00044          N7     EQU ..-7       DEC  -7
0690  00045          N6     EQU ..-6       DEC  -6
0691  00046          N5     EQU ..-5       DEC  -5
0692  00047          N4     EQU ..-4       DEC  -4
0693  00050          N3     EQU ..-3       DEC  -3
0694  00051          N2     EQU ..-2       DEC  -2
0695  00052          N1     EQU ..-1       DEC  -1
0696  00053          N0     EQU ..         DEC  0
0697  00054          .1     EQU ..+1       DEC  1
0698  00055          .2     EQU ..+2       DEC  2
0699  00056          .3     EQU ..+3       DEC  3
0700  00057          .4     EQU ..+4       DEC  4
0701  00060          .5     EQU ..+5       DEC  5
0702  00061          .6     EQU ..+6       DEC  6
0703  00062          .7     EQU ..+7       DEC  7
0704  00063          .8     EQU ..+8       DEC  8
0705  00064          .9     EQU ..+9       DEC  9
0706  00065          .10    EQU ..+10      DEC  10
0707  00066          .17    EQU ..+11      DEC  17
0708  00070          M17    EQU ..+13      OCT  17
0709  00071          M37    EQU ..+14      OCT  37
0710  00072          M77    EQU ..+15      OCT  77
0711  00073          M177   EQU ..+16      OCT  177
0712  00074          M377   EQU ..+17      OCT  377
0713  00075          M1774  EQU ..+18      OCT  177400
0714  00076          M3777  EQU ..+19      OCT  3777
0715  00077          M1777  EQU ..+20      OCT  177700
0716  00100          SMLWA  EQU .+0        LWA OF USEABLE MEMORY
0717  00101          JBINS  EQU .+1        START T/S OF JBIN AREA
0718  00102          JBINC  EQU .+2        CURRENT T/S OF JBIN AREA
0719  00111          BATCH  EQU .+9        L.U. OF BATCH INPUT DEVICE
0720  00112          SYSTY  EQU .+10       L.U. OF SYSTEM TELETYPE
0721  00116          SECTR  EQU .+14       # OF SECTORS/TRACK
0722  00147          EXPG7  EQU .+39
0723  00154          DISCO  EQU .+44       LAST TRACK ON DISC
0724  00155          SYSSC  EQU .+45
0725  00157          UDNTS  EQU .+47       NEXT USER AVAILABLE T/S
0726  00160          SYNTS  EQU .+48       NEXT SYSTEM AVAILABLE T/S
0727  00161          CUDSC  EQU .+49       CURRENT USER DISC SUBCHANNEL
0728  00174          TSONE  EQU .+60       NEXT T/S AFTER LAST REQUEST
0729  00200          DISCL  EQU .+64       #'0 IF USER AREA NOT ON SYS DISC
0730  00254          SMFWA  EQU .+108      FWA OF USER MAIN AREA
0731  00255          SBFWA  EQU .+109      FWA OF USER BASE AREA
0732  00256          SBLWA  EQU .+110      LWA OF USER BASE AREA
0733  00313          MSECT  EQU .+139      NEG # OF SECTORS/TRACK
0734  00324          DSCLB  EQU .+148      RELOCATABLE LIBRARY T/S
0735  00325          DSCL#  EQU .+149      # OF RELOCATABLE LIBRARY SECTORS
0736  00331          SSFLG  EQU .+153
0737                        END LOADR
```

** NO ERRORS*

```
#LIB    00392/02 00257/02 00388/02

#SECT   00505/01 00483/01 00487/01

#WRDS   00302/05 00141/03 00144/03 00170/03 00199/03 00275/03 00280/03
        00296/05

*$DBP1  00448/07

*$DBP2  00452/07

*$MEMR  00454/07

.       00684/07 00716/07 00717/07 00718/07 00719/07 00720/07 00721/07
        00722/07 00723/07 00724/07 00725/07 00726/07 00727/07 00728/07
        00729/07 00730/07 00731/07 00732/07 00733/07 00734/07 00735/07
        00736/07

..      00685/07 00686/07 00687/07 00688/07 00689/07 00690/07 00691/07
        00692/07 00693/07 00694/07 00695/07 00696/07 00697/07 00698/07
        00699/07 00700/07 00701/07 00702/07 00703/07 00704/07 00705/07
        00706/07 00707/07 00708/07 00709/07 00710/07 00711/07 00712/07
        00713/07 00714/07 00715/07

.1      00697/07 00154/01 00291/01 00339/01 00344/01 00421/01 00562/01
        00023/02 00240/02 00268/02 00347/03 00220/04 00142/05 00020/07
        00026/07

.10     00706/07 00548/01 00533/03 00700/03 00710/03 00692/05

.11     00426/07 00521/03

.12     00427/07 00341/01

.127    00432/07 00654/05 00665/05

.128    00475/07 00480/01 00565/01 00143/03 00198/03 00255/03 00274/03
        00279/03 00375/03 00698/03 00708/03 00234/05 00334/05 00522/05
        00341/06 00346/06

.14     00428/07 00015/04 00414/05

.16     00429/07 00290/01 00499/04 00544/06

.17     00707/07 00216/01 00709/04

.18     00430/07 00364/01 00465/03 00566/03 00011/04

.2      00698/07 00308/01 00338/01 00433/01 00466/01 00511/01 00521/01
        00009/02 00027/02 00216/02 00238/02 00284/02 00512/03 00154/04
        00259/04 00141/05 00180/05 00218/05 00556/06 00019/07 00083/07

.3      00699/07 00468/01 00029/02 00286/02 00567/02 00569/02 00006/03
        00068/03 00154/03 00158/03 00196/03 00328/03 00449/03 00459/03
        00524/03 00563/03 00580/03 00001/04 00151/04 00261/04 00374/04
```

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        00471/04 00637/04 00714/04 00071/06 00562/06

.36     00431/07 00570/03 00210/04 00368/04

.4      00700/07 00470/01 00478/01 00031/02 00288/02 00451/03 00263/04
        00293/04 00591/04 00152/05 00636/05 00637/05 00681/05

.5      00701/07 00375/01 00458/01 00472/01 00033/02 00120/02 00290/02
        00535/02 00015/03 00043/03 00050/03 00453/03 00473/03 00527/03
        00628/03 00642/03 00171/04 00265/04 00575/04 00593/04 00327/05
        00417/05 00648/05 00660/05

.6      00702/07 00573/02 00059/04 00224/04 00237/04 00530/04 00595/04
        00351/05

.7      00703/07 00553/01 00227/02 00340/03 00219/04 00239/04 00258/04
        00277/04 00532/04 00590/04 00353/05 00156/07

.8      00704/07 00022/07

.9      00705/07 00518/03 00234/04

A       00682/07 00217/04 00225/04 00235/04 00256/04 00322/04 00474/04
        00598/04 00640/04 00664/04 00717/04 00127/05 00389/05 00438/05
        00451/05 00454/05 00761/05 00067/07 00161/07 00254/07 00260/07
        00271/07 00285/07

AABUF   00528/05 00534/01 00192/05 00202/05 00508/05

ABBUF   00529/05 00195/05 00200/05 00511/05

ABFLG   00501/05 00538/01 00193/05 00199/05 00487/05 00509/05 00515/05

ABORT   00544/06 00378/01 00538/02 00018/03 00483/03 00124/05 00618/06
        00625/06

ABRTX   00543/06 00037/02 00040/02 00293/02 00587/02 00011/03 00510/03
        00296/04 00460/05 00020/06 00056/06

ABSID   00543/07 00652/03 00679/03

ABUF    00530/05 00528/05

ADBUF   00477/07 00146/03 00157/03 00166/03 00576/03 00695/03 00699/03
        00704/03 00044/04 00049/04 00041/06 00107/06 00111/06 00131/06
        00147/06 00151/06 00164/06

AEXEC   00458/07 00259/01 00261/01 00263/01 00167/02 00171/02 00177/02

AIBUF   00478/07 00490/03 00496/03 00547/03 00709/03 00028/04 00778/05
        00780/05

ALBUF   00479/07 00580/01 00095/02 00249/03 00252/03

ALINK   00233/07 00227/04 00236/07 00296/07 00394/07 00398/07 00402/07
```

```
ALLOC   00446/05 00508/04 00395/05 00458/05

AMAD    00544/07 00431/01 00434/01 00438/01 00440/01 00444/01 00448/01
        00451/01 00452/01 00453/01 00127/04 00131/04 00133/04 00134/04
        00137/04 00138/04 00144/04 00399/06 00403/06

AME12   00482/07 00204/04 00360/04

AME15   00483/07 00366/04

AMEM5   00480/07 00201/04 00357/04 00497/04

AMEM8   00481/07 00363/04

AMLST   00484/07 00126/04 00211/04 00369/04 00500/04 00397/06

ANEW    00167/05 00164/05

ASCNO   00677/07 00169/01 00052/04

B       00683/07 00136/01 00141/01 00147/01 00150/01 00153/01 00206/01
        00223/01 00435/01 00441/01 00446/01 00554/01 00010/02 00017/02
        00228/02 00232/02 00529/02 00629/02 00634/02 00159/03 00341/03
        00357/03 00513/03 00702/03 00712/03 00185/04 00191/04 00247/04
        00249/04 00252/04 00302/04 00319/04 00334/04 00345/04 00348/04
        00351/04 00354/04 00403/04 00406/04 00412/04 00425/04 00433/04
        00461/04 00464/04 00539/04 00554/04 00561/04 00631/04 00677/04
        00684/04 00686/04 00691/04 00697/04 00029/05 00251/05 00255/05
        00257/05 00313/05 00582/05 00585/05 00606/05 00615/05 00639/05
        00642/05 00046/06 00060/06 00062/06 00094/06 00116/06 00125/06
        00215/06 00222/06 00268/06 00273/06 00307/06 00314/06 00327/06
        00363/06 00401/06 00451/06 00471/06 00478/06 00186/07 00249/07
        00330/07

B1777   00632/06 00599/06

BATCH   00719/07 00328/01 00332/01 00615/06 00622/06 00008/07 00012/07

BBADD   00021/07 00005/07

BBUF    00531/05 00529/05

BD005   00015/04 00010/04

BD010   00018/04 00014/04

BDEND   00007/04 00593/03

BDLD    00592/03 00596/03 00006/04

BGBND   00552/07 00553/03

BGSPL   00177/04 00172/04

BIDNT   00530/07 00199/01 00584/03 00082/05
```

```
 BLANK   00443/07 00143/04 00494/04 00061/07

 BLAST   00441/07 00486/04

 BLCK#   00285/03 00197/03 00241/03 00254/03 00259/03 00273/03 00355/03

 BLCK1   00270/03 00245/03

 BLCK2   00247/03 00277/03

*BLCK3   00265/03

 BLCK5   00262/03 00267/03

 BLCK6   00279/03 00273/02 00390/02 00272/03

 BLIN0   00392/07 00349/07 00386/07 00405/07

 BLIN1   00398/07 00404/07

*BLIN2   00350/07

 BLIN3   00353/07 00105/04 00341/07 00366/07

 BLINK   00376/07 00330/04 00313/07 00319/07 00322/07 00326/07 00336/07
         00378/07 00385/07 00390/07

 BLKAD   00284/03 00414/01 00262/02 00367/02 00238/03 00248/03 00263/03
         00265/03

 BLNKS   00442/07 00400/06 00439/06

 BLOCK   00236/03 00416/01 00265/02 00268/03 00410/03

 BLST    00520/07 00191/01 00044/05

 BMES    00633/06 00592/06

 BMES1   00635/06 00603/06

 BNDHD   00380/04 00344/04

 BP#     00547/07 00187/01 00201/01

 BPADD   00441/05 00434/05 00439/05

 BPAGE   00680/07 00679/07

 BPALC   00394/05 00383/05

 BPBE    00613/06 00595/06 00601/06

 BPBUF   00579/07 00179/01 00188/01 00193/01 00204/01 00663/04 00027/05
         00387/05 00436/05 00449/05 00760/05 00311/06 00329/06

 BPEND   00546/07 00189/01
```

```
 BPN     00244/04 00232/04 00241/04

 BPOIT   00553/07 00185/01 00662/04 00026/05 00386/05 00435/05 00448/05
         00759/05 00312/06 00330/06

 BPOUT   00325/06 00623/03 00665/03 00688/03 00333/06 00344/06

 BPSCN   00374/05 00479/04 00682/04 00393/05 00396/05 00299/07

 BPSRC   00380/05 00391/05

 BPSTR   00077/06 00174/01 00035/04 00042/04 00056/04 00081/06

 BPSYO   00334/06 00348/06

 BS1     00713/03 00691/03 00706/03

 BSBAD   00548/07 00627/03 00664/03 00666/03 00675/03 00686/03 00716/03
         00661/05

 BSEND   00682/03 00635/03

 BSLD    00634/03 00640/03 00644/03 00650/03 00681/03

 BSPAD   00549/07 00625/03 00677/03 00690/03 00649/05

 BSSDP   00550/07 00578/04 00650/05

*BTRSC   00551/07

 BUFCL   00309/05 00536/01 00227/05 00317/05 00782/05 00108/06 00148/06

 BUMP    00400/03 00315/02 00316/02 00319/02 00322/02 00325/02 00352/02
         00484/02 00485/02 00488/02 00491/02 00495/02 00498/02 00501/02
         00504/02 00624/02 00625/02 00682/02 00683/02 00687/02 00690/02
         00694/02 00086/03 00336/03 00408/03 00411/03 00431/03

 BYTE    00707/04 00596/04

 CBASE   00555/07 00580/04 00021/06

 CBLA    00286/03 00239/03 00362/03 00370/03

 CBUF    00521/05 00512/05 00545/05

 CDEC    00765/05 00730/05

 CF10    00243/02 00239/02

 CFILE   00238/02 00230/02

 CHKER   00042/02 00019/02

*CHKOK   00338/03
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CHRDB   00456/07 00201/06 00205/06 00210/06

CHRDE   00450/07 00149/02 00151/02 00153/02 00394/04 00398/04 00404/04
        00734/04 00738/04 00002/05 00009/05 00013/05 00018/05 00189/06
        00193/06 00198/06

CIDNT   00533/07 00585/03 00416/06 00423/06

CL      00226/05 00221/05

CLBPS   00304/06 00292/06

CLFLG   00342/04 00384/04 00387/04

CLID3   00326/05 00003/04 00376/04 00339/05 00343/05

CLINK   00416/07 00300/07

CLIST   00396/06 00120/04 00343/04 00485/04 00272/06 00275/06 00405/06

CLORD   00381/02 00386/02

CLR0    00457/03 00480/03

CLRID   00442/03 00456/03 00470/03 00477/03

CLRLT   00285/06 00668/03 00717/03 00113/04 00309/06 00318/06

CLRNX   00291/06 00296/06 00300/06 00303/06

CLRTK   00085/06 00040/06 00133/06

CLSRC   00254/04 00557/04 00611/04

CLST    00307/04 00312/04

CLSUT   00360/05 00365/05 00367/05

CLXXX   00556/07 00385/04 00388/04 00181/06 00182/06

CMES    00389/01 00340/01

CMESS   00063/04 00016/04

CMND    00500/05 00483/05 00520/05

CNFLG   00557/07 00064/02 00084/02 00111/02

COMAD   00508/07 00554/03

COMMA   00465/07 00458/06 00063/07

CON     00153/07 00146/07 00149/07 00163/07

CONV    00137/07 00104/07 00119/07 00177/07
```

```
CONV1   00143/07 00151/07

CONV2   00165/07 00155/07

CONV3   00194/07 00166/07

CONVD   00355/06 00202/04 00205/04 00358/04 00361/04 00364/04 00367/04
        00498/04 00379/06

COREA   00295/05 00269/05 00282/05

COUNT   00558/07 00282/01 00302/01 00304/01 00366/01 00370/01 00260/02
        00243/03 00247/03 00270/03

CPADD   00420/07 00295/07 00307/07 00362/07

CPBAS   00417/07 00293/07 00314/07 00360/07 00395/07

CPL     00413/07 00151/01 00244/07

CPLOC   00418/07 00292/07 00316/07 00329/07 00334/07 00359/07 00371/07
        00380/07 00388/07

CPLST   00184/04 00176/04

CPMAX   00419/07 00287/07 00331/07 00364/07

CPXXX   00190/04 00183/04

CROSS   00339/07 00275/04 00310/07

CUDSC   00727/07 00240/01 00037/04

CURAD   00559/07 00535/01 00102/02 00107/02 00577/03 00203/05 00226/05

CURAI   00560/07 00491/03 00498/03 00511/03 00519/03 00525/03 00772/05
        00773/05 00781/05

CURAL   00561/07 00432/01 00581/01 00007/02 00008/02 00015/02 00305/02
        00317/02 00320/02 00323/02 00486/02 00489/02 00492/02 00496/02
        00499/02 00502/02 00505/02 00620/02 00626/02 00677/02 00685/02
        00688/02 00691/02 00126/03 00253/03 00316/03 00338/03 00402/03
        00215/04 00223/04 00233/04 00244/04 00248/04 00250/04 00255/04
        00276/04 00303/04 00439/04 00442/04 00445/04 00475/04 00567/04
        00582/04 00599/04 00616/04 00628/04 00633/04 00641/04 00707/04
        00713/04 00721/04 00035/05 00467/05 00546/05

CURAP   00562/07 00587/03 00630/03 00005/04 00416/04 00419/04 00331/05
        00337/05 00340/05 00224/06 00226/06

CURAT   00563/07 00331/06 00336/06 00345/06 00347/06 00356/06 00368/06
        00369/06 00372/06 00374/06 00375/06 00376/06

D57     00473/07 00332/03

DADRR   00447/07 00229/06
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DATAB 00515/07 00346/01 00355/01 00028/07

DATB 00346/01 00352/01 00037/07

DBASE 00565/07 00028/06 00170/06 00260/06

DBFL2 00567/07 00142/02 00161/02

DBFLG 00566/07 00148/01 00139/02 00382/04

DBL 00618/02 00497/01 00074/02 00299/02 00631/02 00637/02

DBL0 00581/04 00570/04

DBL1 00582/04 00615/04

DBL2 00587/04 00614/04

DBL3 00600/04 00621/04 00632/04 00695/04 00698/04 00723/04

DBL4 00616/04 00592/04

DBL5 00620/04 00526/04

DBL6 00633/04 00594/04

DBL7 00691/04 00680/04

DBL8 00694/04 00690/04

DBL9 00697/04 00671/04

DBLAD 00568/07 00568/04 00600/04 00612/04 00674/04

DBLR 00074/02 00030/02

DBSET 00466/05 00254/04 00279/04 00280/04 00437/04 00438/04 00441/04
00444/04 00447/04 00502/04 00565/04 00566/04 00581/04 00586/04
00608/04 00635/04 00720/04 00725/04 00469/05 00471/05

DBUF 00511/07 00149/03 00150/03 00156/03 00163/03 00047/04 00477/07

DBUGF 00569/07 00021/05 00049/06 00058/06

DCNT 00570/07 00533/01 00103/02 00114/02 00575/03 00213/05

DCRNT 00571/07 00035/06 00039/06 00091/06 00095/06 00117/06 00130/06
00163/06 00171/06

DDBLR 00561/04 00262/04

DDOUT 00190/05 00105/02 00117/02 00238/05

DDRV 00479/03 00452/03

```
DEBUG   00732/04 00305/04 00736/04 00740/04 00004/05 00038/05

DEI10   00391/04 00396/04 00400/04 00408/04

DEIDG   00382/04 00336/04

DEN10   00304/04 00290/04 00294/04

DEN20   00305/04 00284/04

DEN30   00299/04 00287/04

DENDR   00271/04 00266/04

DENTR   00430/04 00260/04

DEXTR   00431/04 00264/04

DFPBF   00487/07 00376/01 00446/06

DFSTS   00486/07 00041/04

DFUTS   00485/07 00034/04

DINIT   00168/06 00604/03 00655/03 00175/06

DISCL   00729/07 00487/03 00043/04 00048/04

DISCO   00723/07 00242/01

DISCX   00572/07 00309/01 00512/01 00217/02 00550/02 00155/04 00294/05
        00479/06 00072/06

DISKA   00249/05 00209/05 00256/05 00260/05 00600/05 00031/06 00261/06

DISKI   00268/05 00147/03 00250/03 00497/03 00696/03 00045/04 00273/05
        00132/06

DISKO   00281/05 00167/03 00548/03 00705/03 00029/04 00050/04 00286/05
        00779/05 00112/06 00152/06 00165/06 00337/06

DLIN1   00326/07 00318/07 00321/07

DLIN2   00319/07 00324/07

DLINK   00298/07 00394/05 00302/07 00305/07 00328/07 00332/07 00354/07

DLU     00498/05 00219/05 00480/05 00564/05

DONE    00116/07 00090/07 00095/07 00101/07 00118/07

DONE1   00119/07 00124/07

DOSHD   00460/07 00567/03

DPWRS   00497/07 00359/06
```

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DRCH0   00504/03 00530/03

DRCH1   00511/03 00503/03

DRCH5   00524/03 00517/03

DRCH6   00529/03 00523/03

DRCHA   00509/03 00226/01 00129/02 00787/05 00090/06

DRCHK   00498/03 00531/03

DRCLR   00546/03 00540/03

DRKEY   00174/05 00568/03 00572/03 00212/04 00370/04 00501/04 00165/05
        00184/05

DRSCH   00490/03 00508/03

DRWOW   00506/05 00492/05 00526/05 00552/05

DSCAN   00006/05 00011/05 00015/05 00020/05

DSCL#   00735/07 00255/02

DSCLB   00734/07 00261/02

DSCNT   00585/07 00063/02 00122/02 00215/02 00262/03 00224/05 00486/05
        00550/05

DSK01   00582/07 00097/06 00124/06 00142/06

DSK02   00583/07 00102/06 00128/06 00146/06

DSKAB   00573/07 00248/01 00578/03

DSKAD   00574/07 00217/01 00220/01 00231/01 00235/01 00277/01 00367/01
        00412/01 00515/01 00545/01 00049/02 00066/02 00128/02 00579/03
        00619/03 00682/03 00685/03 00714/03 00033/04 00040/04 00166/04
        00205/05 00208/05 00210/05 00169/06 00264/06 00335/06 00339/06

DSKBR   00575/07 00683/03 00713/03

DSKBS   00576/07 00620/03 00684/03

DSKID   00577/07 00489/03 00495/03 00505/03 00546/03 00611/03 00693/03
        00025/04 00777/05 00784/05

DSKMN   00578/07 00169/04 00644/05

DSKNM   00596/02 00413/01 00067/02 00263/02 00366/02 00556/02 00366/03

DSKRD   00579/07 00477/05 00489/05 00538/05 00540/05

DSKSS   00580/07 00237/01 00514/01
```

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DSKTM   00581/07 00246/01 00088/06
DSKUD   00584/07 00110/06 00113/06 00115/06 00154/06
DTRTM   00132/02 00230/01 00127/02
DUP     00013/03 00003/03
DVR     00657/07 00479/03 00292/04 00635/05 00680/05
DVR1    00725/05 00732/05 00735/05 00739/05 00752/05 00757/05
DVR2    00741/05 00726/05
DVRAD   00714/05 00682/05
DVRS    00748/05 00733/05 00737/05 00762/05
DVRTN   00688/05 00745/05
DWRIT   00094/02 00071/02 00085/02 00130/02
EBUF    00233/05 00196/05
EN.XT   00674/02 00502/01 00079/02 00089/03
END     00123/03 00475/01 00087/02 00132/03
END1    00388/02 00382/02
ENDDR   00532/03 00500/03
ENDR    00082/02 00034/02
ENEX1   00449/04 00454/04 00458/04 00466/04
ENEX2   00340/02 00327/02
ENEX3   00348/02 00333/02
ENEX4   00356/02 00342/02
ENTID   00413/04 00338/04
ENTR    00077/02 00028/02
ENTXX   00404/02 00409/02 00413/02 00421/02
ENXT1   00084/03 00022/03 00052/03 00060/03 00080/03
ENXX1   00337/02 00362/02
EPLST   00339/04 00422/04
ERR01   00661/07 00042/02
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ERR02   00662/07 00036/02

ERR03   00663/07 00019/06

ERR04   00664/07 00459/05

ERR05   00665/07 00542/06

ERR06   00666/07 00471/03

ERR07   00667/07 00013/03

ERR08   00668/07 00295/04

ERR09   00669/07 00039/02

ERR10   00670/07 00509/03

ERR11   00671/07 00122/05

ERR12   00672/07 00373/01

ERR13   00673/07 00533/02

ERR14   00674/07 00586/02

ERR15   00675/07 00010/03

ERR16   00676/07 00055/06

ERR17   00295/02 00292/02

ERR18   00630/06 00613/06

ERR19   00631/06 00620/06

ERROR   00150/05 00374/01 00043/02 00534/02 00014/03 00472/03 00123/05
        00155/05 00543/06 00614/06 00621/06

ETFLG   00587/07 00558/01 00572/01 00578/01

EXCNT   00588/07 00163/02 00199/02 00203/02 00214/02 00219/02 00378/02
        00680/02 00087/03 00436/04 00555/04 00564/04 00609/04 00404/05
        00411/05 00420/05 00422/05 00470/06 00477/06

EXEC    00004/01 00214/01 00288/01 00336/01 00342/01 00362/01 00551/01
        00560/01 00225/02 00463/03 00561/03 00057/04 00139/05 00178/05
        00229/05 00291/05 00517/05 00561/05 00078/06 00560/06 00017/07
        00024/07

EXEND   00555/04 00503/04 00513/04 00518/04 00526/04 00535/04 00544/04
        00548/04 00551/04

EXNND   00350/02 00336/02 00339/02 00358/02 00365/02
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EXORD   00589/07 00618/04 00624/04 00648/04 00654/04

EXPG7   00722/07 00178/01

EXT1    00048/03 00717/02

EXT2    00504/04 00469/04

EXTR    00078/02 00032/02

FETCH   00314/03 00420/01 00457/01 00465/01 00004/02 00267/02 00283/02
        00349/03 00368/03 00380/03

FIOPT   00591/07 00321/01 00243/02

FIRST   00241/05 00539/01 00215/05 00220/05

FLLA    00369/07 00345/07

GENID   00622/05 00613/03 00658/03 00690/05 00694/05 00700/05 00705/05

GET10   00449/06 00483/06

GET15   00486/06 00468/06

GET20   00487/06 00459/06 00461/06 00463/06

GETD    00380/06 00366/06 00370/06 00373/06 00392/06

GETL    00107/02 00104/02

GETP    00438/06 00358/01 00445/06 00485/06 00488/06 00489/06 00508/06
        00529/06

GOCHK   00225/02 00182/02 00242/02

GTS     00580/05 00206/05 00270/05 00283/05 00490/05 00541/05 00590/05

*HABSS  00578/04

HDFLG   00592/07 00654/03 00076/04 00128/04 00163/04 00282/04

I.O     00288/05 00272/05 00285/05 00299/05

IBUF    00512/07 00478/07

ICNT    00594/07 00493/03 00520/03 00522/03 00526/03 00528/03 00532/03
        00538/03 00609/03 00688/05 00691/05 00697/05 00774/05 00789/05

ID1     00535/07 00337/02 00519/02 00536/02 00543/02 00020/03 00042/03
        00054/03 00461/03 00474/03 00602/03 00636/03 00132/04 00184/04
        00515/04 00097/05 00363/05 00629/05 00188/06 00200/06 00217/06
        00420/06 00047/07 00078/07 00079/07 00084/07 00087/07 00139/07
        00143/07 00147/07 00150/07

ID2     00536/07 00523/02 00545/02 00136/04 00099/05 00631/05 00714/05
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        00192/06 00204/06 00141/07 00158/07 00162/07

ID3     00537/07 00527/02 00547/02 00444/03 00446/03 00594/03 00597/03
        00140/04 00420/04 00423/04 00521/04 00101/05 00356/05 00358/05
        00640/05 00718/05 00196/06 00208/06 00213/06 00006/07 00172/07
        00180/07

ID4     00538/07 00554/02 00598/03 00152/04 00103/05 00175/07 00184/07
        00190/07

ID5     00539/07 00557/02 00213/04 00105/05 00036/07 00168/07 00176/07
        00194/07

ID6     00540/07 00118/02 00574/02 00004/03 00040/03 00048/03 00064/03
        00128/03 00129/03 00447/03 00457/03 00460/03 00638/03 00519/04
        00573/04 00107/05 00347/05 00633/05 00424/06 00038/07 00053/07
        00058/07

ID7     00541/07 00485/01 00491/01 00123/02 00577/02 00082/03 00645/03
        00122/04 00109/05 00040/07 00052/07 00059/07

IDCLR   00481/03 00443/03

IDEC    00764/05 00728/05

IDMBS   00595/07 00603/03 00648/03

IDSCN   00415/06 00592/03 00419/06 00429/06 00430/06 00431/06

IDX     00092/05 00257/01 00511/02 00062/03 00076/03 00442/03 00634/03
        00417/04 00517/04 00525/04 00096/05 00118/05 00126/05 00345/05
        00627/05 00186/06 00418/06

IGNOR   00596/07 00254/02 00278/02 00297/02 00309/02 00328/02 00356/02
        00369/02 00372/02 00377/02 00514/02

IMAIN   00597/07 00055/03 00073/03 00637/03 00625/05 00421/06

INCOR   00707/03 00694/03

INCRA   00382/06 00387/06

INDSK   00137/06 00155/06 00172/06

INIDX   00081/05 00256/01 00510/02 00441/03 00633/03 00084/05 00185/06

INLST   00043/05 00253/01 00145/02 00164/02 00206/02 00271/02 00380/02
        00403/02 00696/02 00306/04 00390/04 00448/04 00619/04 00649/04
        00005/05 00046/05 00359/05 00405/05 00724/05 00290/06

INNAM   00476/05 00214/04 00496/05

INREL   00536/05 00470/05 00494/05 00554/05

INSCN   00598/07 00585/04 00613/04
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INSTR 00599/07 00634/04 00636/04 00643/04 00666/04 00672/04 00694/04

IP 00737/05 00729/05

JBINC 00718/07 00278/01 00280/01 00283/01

JBINS 00717/07 00274/01

JBN10 00288/01 00305/01

JBN20 00301/01 00296/01

JBN30 00306/01 00298/01

L001 00414/07 00094/04 00097/04 00108/04 00240/07 00343/07

L01 00415/07 00107/04 00115/04 00157/04 00167/04 00207/04 00271/04
00328/04 00482/04 00571/04 00603/04 00234/07 00303/07 00339/07

LAB10 00021/06 00018/06

LAB19 00129/06 00099/06 00104/06 00106/06

LAB20 00041/06 00036/06

LAB25 00057/06 00051/06

LAB30 00059/06 00048/06 00054/06

LAB40 00061/06 00045/06

LABD0 00011/06 00327/04 00607/04 00031/05 00066/06 00068/06 00400/07

LBERR 00292/02 00270/02

LBUF 00513/07 00564/01 00097/02 00479/07

LCNT 00600/07 00002/02 00100/02 00109/02 00257/03 00352/03 00374/03
00407/03 00251/04 00253/04 00468/05 00548/05

LD1 00104/04 00099/04

LD2 00114/04 00110/04

LD3 00094/04 00374/07

LD4 00163/04 00159/04

LD5 00166/04 00162/04

LD6 00213/04 00209/04

LD7 00276/04 00273/04

LD8 00608/04 00605/04 00726/04

LDABS 00552/03 00535/03

LDBLR 00297/02 00287/02

LDING 00601/07 00591/03 00119/05

LDRIN 00560/01 00574/01 00072/02 00088/02

LENDR 00372/02 00291/02

LENTR 00302/02 00285/02

LEXTR 00303/02 00289/02

LIB1 00267/02 00389/02

LIBRY 00706/05 00589/03 00618/03 00662/03 00230/04 00243/04 00734/05
00743/05

LIBS 00249/02 00218/02 00250/02

LIBUT 00536/04 00531/04 00533/04

LINKC 00683/04 00337/07 00416/07

*LINNM 00284/02

LIRD 00265/02 00370/02

LISKP 00282/02 00280/02 00300/02 00314/02 00355/02

LISTU 00659/07 00145/01 00557/03 00181/05

LMAIN 00439/03 00205/02 00208/02 00224/02 00241/02

LOO1 00178/01 00170/01

LOAD 00074/04 00606/03 00082/04

LOAD1 00168/01 00609/06

LOADL 00164/02 00188/02 00198/02 00202/02

LOADN 00093/04 00426/04

LOADR 00136/01 00005/01 00514/07 00517/07 00518/07 00737/07

LOADS 00090/04 00657/03 00081/04 00375/04 00377/04

LOADX 00107/04 00280/07 00351/07

LODLB 00139/02 00519/01 00522/01 00556/01

LODLL 00203/02 00166/02 00221/02

LODLX 00189/02 00170/02 00174/02 00179/02

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LOVER   00542/06 00075/05

LOWER   00602/07 00376/05 00380/05 00385/05 00388/05 00287/06 00294/06
        00304/06

LPARN   00466/07 00460/06 00505/06

LSCAN   00402/02 00326/02 00405/02 00422/02 00423/02 00240/06

LST1    00524/07 00260/01 00150/02 00168/02 00407/02 00429/02 00700/02
        00016/03 00027/03 00393/04 00452/04 00488/04 00008/05 00060/05
        00418/05 00727/05 00049/07 00075/07 00088/07

LST10   00406/05 00410/05 00421/05

LST2    00525/07 00262/01 00152/02 00172/02 00411/02 00431/02 00704/02
        00029/03 00397/04 00456/04 00490/04 00012/05 00062/05 00749/05
        00050/07 00073/07 00094/07 00098/07

LST20   00422/05 00407/05

LST3    00526/07 00264/01 00155/02 00175/02 00185/02 00187/02 00191/02
        00193/02 00349/02 00383/02 00385/02 00414/02 00434/02 00707/02
        00031/03 00309/04 00311/04 00401/04 00462/04 00492/04 00505/04
        00622/04 00652/04 00016/05 00064/05 00753/05 00242/06 00244/06

LST4    00527/07 00266/01 00157/02 00181/02 00194/02 00201/02 00209/02
        00274/02 00334/02 00338/02 00345/02 00363/02 00719/02 00021/03
        00046/03 00057/03 00081/03 00410/04 00510/04 00543/04 00552/04
        00657/04 00022/05 00066/05 00362/05 00408/05 00245/06 00247/06

LST5    00528/07 00267/01 00158/02 00184/02 00190/02 00347/02 00361/02
        00033/03 00477/04 00480/04 00506/04 00509/04 00627/04 00661/04
        00025/05 00068/05 00366/05 00758/05 00249/06 00293/06 00297/06
        00302/06

LSTCR   00313/04 00308/04

LSTEX   00402/05 00222/02 00424/05 00425/05 00426/05

LSTX    00055/05 00254/01 00146/02 00165/02 00207/02 00272/02 00381/02
        00404/02 00697/02 00307/04 00391/04 00449/04 00620/04 00650/04
        00006/05 00059/05 00074/05 00360/05 00406/05 00725/05 00291/06

LTEMP   00133/02 00096/02 00101/02 00108/02

LTERM   00022/04 00547/06

LTERW   00057/04 00053/04

LTERX   00043/04 00039/04

LTERZ   00051/04 00027/04 00032/04

LTOD    00101/02 00110/02
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 LWH1    00409/07 00561/02 00137/03 00165/03 00096/04 00274/04 00377/07

 LWH2    00410/07 00635/02 00148/03 00282/07 00289/07 00347/07 00372/07
         00383/07 00403/07

 LWH3    00411/07 00103/04 00111/04 00118/04 00197/04 00203/04

 LWH4    00412/07 00101/04 00114/04 00195/04 00200/04 00579/04

 LWR     00175/07 00197/07

 M0760   00438/07 00259/02 00675/04 00678/04 00294/07 00361/07

 M1100   00435/07 00559/03

*M17     00708/07

 M1740   00439/07 00629/04 00667/04

 M177    00711/07 00119/02 00564/02 00005/03 00041/03 00049/03 00067/03
         00152/03 00320/03 00448/03 00514/03 00641/03 00236/04 00529/04
         00574/04 00350/05 00634/05 00715/05 00720/05 00274/06 00426/06
         00056/07 00145/07 00148/07

 M1774   00713/07 00447/01 00154/02 00176/02 00186/02 00192/02 00384/02
         00415/02 00418/02 00433/02 00493/02 00528/02 00692/02 00708/02
         00445/03 00458/03 00141/04 00310/04 00402/04 00405/04 00460/04
         00463/04 00493/04 00017/05 00258/05 00357/05 00641/05 00754/05
         00092/06 00121/06 00139/06 00197/06 00209/06 00243/06 00476/06
         00519/06

*M1777   00715/07

 M200    00469/07 00638/05

 M2000   00437/07 00688/04 00693/04 00363/07

 M240    00569/01 00567/01

 M300    00470/07 00138/01 00235/02

 M37     00709/07 00306/02 00678/02 00434/04

 M377    00712/07 00281/01 00285/01 00506/03 00246/04 00617/04 00623/04
         00645/04 00653/04 00252/05 00583/05 00587/05 00607/05 00785/05
         00087/06 00096/06 00126/06 00144/06 00454/06 00474/06

 M3777   00714/07 00243/01

 M400    00471/07 00325/01 00330/01 00259/05 00010/07

 M60     00468/07 00391/06

 M600    00433/07 00144/01
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 M700    00434/07 00558/06

 M7600   00472/07 00655/05 00666/05 00269/06

 M77     00710/07 00520/01 00621/02 00558/03 00562/04 00553/06

 MAXAD   00603/07 00064/06 00067/06 00174/06

 MAXC    00421/07 00578/02 00627/02 00636/02 00396/07 00399/07 00401/07

 MAXSG   00067/04 00608/03 00670/03 00674/03 00689/03 00701/03 00711/03

 MAXWK   00127/02 00113/02 00121/02

 MESAB   00061/04 00545/06

 MESLD   00056/02 00549/01

 MESSE   00156/05 00151/05 00153/05

 MESUX   00427/05 00415/05

 MLIST   00516/07 00346/04 00349/04 00352/04 00355/04 00487/04 00489/04
         00491/04 00495/04 00480/07 00481/07 00482/07 00483/07 00484/07

*MSECT   00733/07

 MSIGN   00440/07 00552/02 00411/04 00553/04 00630/04 00669/04 00689/04
         00033/05

*N0      00696/07

 N1      00695/07 00210/02 00275/02 00353/03 00501/03 00519/05

 N10     00686/07 00565/03

 N128    00474/07 00532/01 00001/02 00115/02 00354/03 00377/03 00492/03
         00539/03 00574/03 00173/04 00180/04 00331/04 00536/04 00212/05
         00310/05 00547/05 00689/05 00699/05 00788/05

 N13     00573/05 00563/05

 N18     00425/07 00398/06

 N19     00424/07 00080/06

 N2      00694/07 00224/01 00231/05 00284/05 00612/05 00225/06 00364/06

*N3      00693/07

 N4      00692/07 00227/06

 N5      00691/07 00584/04

 N6      00690/07 00197/01 00343/03 00515/03
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N7      00689/07 00116/05

N72     00423/07 00347/01 00029/07

N8      00688/07 00070/07

N9      00687/07 00566/02

NAENT   00462/07 00571/03

NAM     00480/02 00462/01 00069/02 00281/02 00585/02

NAM12   00589/02 00487/02 00518/02 00542/02

NAM34   00590/02 00490/02 00522/02 00544/02

NAM5    00591/02 00494/02 00526/02 00546/02

NAMR    00059/02 00024/02

NB60    00629/06 00066/07

NBPBF   00605/07 00196/01 00392/05

NBPL    00593/02 00500/02 00583/02

NBYT    00725/04 00711/04

NCL     00594/02 00503/02 00553/02 00571/02

NCPL    00279/07 00246/07 00264/07 00266/07

NDA     00598/05 00264/03 00363/03 00539/05 00604/05 00617/05

NDA2    00615/05 00609/05

NEGPM   00536/06 00351/01 00385/01 00443/06 00482/06 00487/06 00033/07
        00117/07

NEW1    00366/03 00371/03

NEW2    00370/03 00359/03

NEWS    00373/03 00325/03

NEXT    00697/02 00702/02 00706/02 00711/02

NEXTD   00370/06 00378/06

NFRST   00223/05 00217/05

NLENT   00502/04 00484/04

NMERR   00039/02 00026/02 00060/02 00222/04 00267/04

NODBG   00162/02 00141/02 00144/02
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NSYMB   00317/02 00354/02

NTFND   00542/02 00512/02

NTMN    00070/03 00066/03

NTYPE   00595/02 00506/02 00563/02

NXFLG   00606/07 00304/02 00312/02 00331/02 00340/02 00350/02 00675/02
        00715/02 00037/03 00084/03 00432/04 00467/04

NXSYM   00439/04 00556/04

NXTID   00511/02 00516/02 00521/02 00525/02 00531/02

O1777   00436/07 00183/02 00685/04 00692/04 00250/07

OMITE   00379/02 00374/02

OPRND   00608/07 00476/04 00496/04 00681/04 00384/05 00437/05 00320/07
        00335/07

OPWRS   00490/07 00357/06

OUTID   00771/05 00537/03 00543/03 00023/04 00630/05 00632/05 00643/05
        00645/05 00670/05 00672/05 00674/05 00676/05 00678/05 00685/05
        00687/05 00696/05 00702/05 00742/05 00744/05 00775/05 00790/05

OUTLN   00207/04 00199/04

OUTR    00071/02 00075/02 00080/02

PAGNO   00610/07 00676/04 00679/04 00308/07

PBE     00620/06 00606/06

PBREL   00611/07 00183/01 00622/03 00687/03 00715/03 00079/04 00659/05

PBUF    00518/07 00365/01 00440/06 00441/06 00442/06 00512/06 00515/06
        00518/06 00487/07

PCNTT   00612/07 00307/01 00425/01 00499/06 00522/06

PCONT   00535/06 00501/06 00513/06 00514/06 00516/06 00517/06 00520/06
        00521/06

PENTZ   00297/04 00278/04 00285/04

PGCNT   00613/07 00590/03 00615/03 00008/04 00030/04
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PLAD    00488/07 00430/01 00586/03 00004/04 00178/04 00177/04 00333/04
        00538/04 00328/05 00333/05 00214/06 00500/06 00046/07 00082/07
        00138/07

PLCNT   00615/07 00174/04 00181/04 00187/04 00193/04 00332/04 00340/04
        00537/04 00546/04 00336/05 00341/05

PLEXT   00539/04 00547/04

PLFLG   00616/07 00530/01 00022/02 00065/02 00083/02 00092/04 00569/04
        00624/05

PLGTH   00617/07 00226/04 00288/04 00313/04 00052/06 00257/07 00356/07

PLIST   00514/07 00043/07 00044/07 00045/07 00121/07 00122/07 00123/07
        00488/07

PLMAN   00618/07 00632/03 00179/04 00182/04 00330/05

PLSCN   00334/04 00341/04

PLST    00522/07 00192/01 00269/01 00543/01 00047/02 00160/02 00436/02
        00035/03 00057/05 00113/05 00312/07 00393/07

PMBUF   00537/06 00354/01 00449/06 00457/06

PPREL   00619/07 00556/03 00582/03 00601/03 00077/04 00646/05

PRBLN   00098/07 00062/07

PRCMA   00093/07 00064/07

PRENT   00620/07 00304/04 00030/05 00037/05 00684/05 00738/05 00741/05

PRENX   00315/02 00311/02

*PRHED  00566/03

PRN     00104/07 00096/07 00100/07

PROG5   00508/06 00533/06

PROG9   00532/06 00526/06

PROGL   00497/06 00379/01 00504/06 00507/06 00511/06 00528/06 00531/06
        00534/06

PS1     00283/07 00277/07

PS2     00282/07 00242/07
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        00170/04 00373/04 00329/05 00647/05 00427/06

RANAD   00623/07 00360/06 00382/06 00388/06 00390/06

RBTAD   00504/07 00300/04 00472/04 00597/04 00638/04 00715/04

RCERR   00036/02 00423/01 00474/01 00063/03 00077/03 00318/03 00330/03
        00334/03 00345/03 00392/04 00418/04 00007/05 00024/05 00346/05
        00628/05

RCN02   00328/01 00323/01

RCN04   00336/01 00327/01

RCN05   00342/01 00335/01

RCN10   00358/01 00388/01

RCN30   00379/01 00372/01

RCN50   00511/01 00320/01 00357/01 00361/01 00384/01

RCN60   00529/01 00051/02 00234/02 00237/02

RCNTL   00321/01 00276/01 00279/01 00349/01 00387/01 00244/02

*RCNTP  00316/01

REKEY   00625/07 00583/04 00587/04 00589/04

RELAD   00624/07 00555/03 00229/04 00281/04 00317/04 00320/04 00014/06
        00061/06

REMDO   00161/06 00614/03 00659/03 00037/06 00138/06 00143/06 00150/06
        00166/06

RES05   00252/06 00184/06

RES15   00186/06 00203/06 00207/06 00212/06 00223/06

RES20   00200/06 00191/06 00195/06

RES30   00213/06 00199/06 00220/06

RES40   00221/06 00218/06

RES50   00224/06 00187/06

RES60   00231/06 00251/06

RES70   00250/06 00241/06
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RESET 00177/06 00616/03 00660/03 00265/06

*RIC 00626/07

RLGTH 00627/07 00565/02 00322/03

RPARN 00467/07 00462/06 00524/06

RQ 00301/05 00289/05 00293/05

RRL9 00267/06 00024/06 00255/06 00276/06

RSS 00221/04 00104/04

RTRN 00283/03 00191/03 00281/03

SAVE1 00068/04 00610/03 00697/03 00707/03

SAVE2 00069/04 00612/03 00692/03 00703/03

SAVNM 00685/02 00088/03

SAVSS 00629/07 00171/01 00054/04

SBFWA 00731/07 00160/01 00171/07

SBLWA 00732/07 00162/01 00179/07

SCANX 00363/02 00330/02

SCHK 00086/07 00081/07

SCNT 00381/03 00326/03 00378/03 00405/03 00426/03

SDSK 00053/02 00546/01 00048/02

SECT 00592/05 00293/01 00294/01 00467/03 00468/03 00236/05 00298/05
00524/05 00584/05

SECTR 00721/07 00303/01 00253/05

SELST 00427/02 00343/02 00359/02 00437/02

SET 00551/06 00050/02 00018/04 00555/06 00557/06 00564/06

SETCR 00070/06 00380/01 00494/03 00024/04 00776/05 00073/06 00109/06
00119/06 00129/06 00149/06 00162/06 00334/06

SETL 00307/07 00367/07

SETMP 00195/04 00189/04

SETOP 00433/05 00481/04 00683/04 00440/05

SETUP 00190/03 00411/01 00251/02 00201/03

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SEXT    00549/04 00541/04

SIDA    00020/03 00001/03 00008/03 00039/03

SIDNT   00055/02 00542/01 00044/02

SKIP    00424/03 00456/01 00464/01 00493/01 00282/02 00379/02 00379/03
        00428/03 00434/03

SLASH   00490/06 00464/06

SLSHE   00446/07 00356/01 00360/01 00383/01 00486/06

SLST    00054/02 00544/01 00046/02

SMFWA   00730/07 00156/01 00174/07

SMLWA   00716/07 00158/01 00198/01 00182/07

SPACE   00162/05 00569/03 00573/03 00605/03 00656/03 00007/04 00342/04
        00371/04 00166/05

SREXT   00650/04 00656/04

SSFLG   00736/07 00168/01 00051/04 00678/07

STAT    00574/05 00565/05

STB     00004/07 00594/06 00605/06 00069/07 00072/07 00085/07 00188/07
        00191/07 00192/07

STB1    00603/06 00624/06

STB2    00008/07 00031/07

STB3    00024/07 00015/07

STB4    00042/07 00105/07

STB5    00052/07 00091/07 00102/07

STBND   00592/06 00155/01 00617/06

SUBH5   00242/04 00238/04

SUBHD   00200/04 00161/04 00164/04

SV1     00378/04 00196/04 00356/04

SV2     00379/04 00198/04 00359/04

SYDBL   00497/01 00469/01

SYENT   00500/01 00467/01

SYEXT   00501/01 00471/01
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 SYM     00143/05 00136/05

 SYM10   00418/01 00494/01

*SYM12   00630/07

 SYM20   00432/01 00455/01

 SYM30   00451/01 00437/01 00443/01 00450/01

*SYM34   00631/07

 SYM40   00456/01 00460/01

*SYM5    00632/07

 SYM50   00462/01 00427/01 00449/01

 SYM70   00464/01 00498/01 00503/01

 SYM75   00493/01 00459/01

 SYMBL   00408/01 00312/01 00381/01 00410/01

 SYNTS   00726/07 00486/07

 SYOUT   00135/05 00377/01 00550/01 00537/02 00017/03 00475/03 00013/04
         00017/04 00145/05 00154/05 00416/05 00419/05 00546/06

 SYSSC   00724/07 00239/01 00036/04

 SYSTY   00720/07 00324/01 00329/01 00333/01 00616/06 00623/06 00009/07
         00013/07

 TABS    00634/07 00012/06 00043/06 00059/06

 TADR    00635/07 00013/06 00023/06

 TBREL   00636/07 00182/01 00621/03 00626/03 00663/03 00667/03 00676/03
         00080/04 00102/04 00112/04 00119/04 00365/04 00377/05 00447/05
         00452/05 00453/05 00664/05 00677/05

 TBUF    00517/07 00318/02 00321/02 00324/02 00348/02 00406/02 00410/02
         00416/02 00417/02 00419/02 00428/02 00430/02 00432/02 00686/02
         00689/02 00693/02 00699/02 00703/02 00709/02 00026/03 00028/03
         00030/03 00415/04 00424/04 00440/04 00443/04 00446/04 00451/04
         00455/04 00459/04 00470/04 00504/04 00516/04 00520/04 00522/04
         00523/04 00527/04 00549/04 00651/05 00658/05 00662/05 00669/05
         00671/05 00675/05 00178/06 00232/06 00235/06 00238/06

 TCNT    00637/07 00360/03 00364/03 00430/03 00432/03 00027/06 00032/06
         00228/06 00250/06 00259/06 00262/06 00328/06 00340/06 00342/06
         00365/06 00377/06

 TDIR    00638/07 00311/01 00317/01 00369/01 00488/01 00194/03 00125/04
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      00602/05

TEMP  00639/07 00219/01 00326/01 00331/01 00345/01 00071/03 00079/03
      00261/03 00266/03 00541/03 00544/03 00560/03 00564/03 00389/04
      00409/04 00028/05 00032/05 00034/05 00176/05 00183/05 00698/05
      00703/05 00717/05 00721/05 00722/05 00750/05 00230/06 00231/06
      00233/06 00234/06 00236/06 00237/06 00239/06 00559/06 00563/06
      00011/07 00027/07

TEMP1 00407/07 00006/02 00020/02 00622/02 00633/02 00142/03 00169/03
      00261/07 00274/07 00284/07 00291/07 00369/07

TEMP2 00408/07 00129/04 00160/04 00602/04 00606/04 00255/07 00268/07

TERMN 00640/07 00359/01 00382/01 00308/02 00353/02 00502/06 00509/06
      00523/06 00530/06

TESTR 00577/01 00571/01

TIDNT 00531/07 00580/02 00061/03 00074/03 00651/03 00680/03 00414/04
      00514/04 00524/04 00083/05 00093/05 00110/05 00111/05 00117/05
      00344/05 00626/05 00417/06 00422/06

TLOG  00575/05 00566/05

TLST  00521/07 00268/01 00159/02 00435/02 00034/03 00045/05 00056/05
      00070/05

TMPAD 00703/04 00642/04 00665/04 00700/04 00719/04 00722/04

TNEXT 00641/07 00034/06 00038/06

TPREL 00506/07 00607/03 00624/03 00669/03 00672/03 00678/03 00078/04
      00100/04 00117/04 00228/04 00242/04 00315/04 00318/04 00326/04
      00362/04 00601/04 00673/04 00036/05 00653/05 00673/05 00686/05
      00254/06 00248/07 00283/07 00286/07 00358/07 00382/07 00389/07

TR    00593/05 00218/01 00222/01 00227/01 00233/01 00287/01 00292/01
      00295/01 00299/01 00301/01 00235/05 00297/05 00523/05 00588/05

TRID5 00356/05 00349/05

TREAD 00548/01 00575/01

TRID3 00337/05 00355/05 00361/05

TSONE 00728/07 00504/03 00783/05 00114/06 00153/06 00338/06

TSTIN 00666/04 00647/04 00701/04

TTBUF 00266/06 00179/06 00252/06

TTYNO 00642/07 00138/05 00144/05

TWORD 00643/07 00025/06 00042/06
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 UBFWA   00653/07 00161/01 00181/01 00195/01 00375/05 00596/06

 UBLNK   00444/07 00755/05 00367/06

 UBLWA   00654/07 00163/01 00186/01 00456/05 00597/06

 UDNTS   00725/07 00247/01 00046/04 00485/07

 UMFWA   00655/07 00157/01 00552/03 00291/04 00607/06

 UMLWA   00656/07 00159/01 00016/06 00608/06

 UND     00700/04 00651/04 00660/04

 UPDA1   00110/06 00120/06

 UPDAT   00107/06 00101/06

 UPNAM   00136/03 00375/02 00130/03 00139/03 00172/03

 UPPER   00645/07 00379/05 00381/05 00289/06 00298/06 00306/06

 UPPR    00179/07 00170/07

 UPPR1   00184/07 00196/07

 USCHK   00461/03 00450/03 00454/03

*UTCNT   00646/07

*UTRSC   00647/07

 W.PRG   00506/01 00419/01 00477/01 00403/03

 WAIT    00559/05 00223/05 00543/05 00559/05 00571/05

 WCMND   00240/05 00232/05

 WDCNT   00649/07 00203/01 00208/01 00429/01 00454/01 00012/02 00155/03
         00161/03 00331/03 00311/05 00315/05 00310/06 00316/06

 WOWC    00499/05 00482/05

 XPREL   00651/07 00583/03 00600/03 00448/06 00466/06 00481/06

 XSSFL   00678/07 00173/01 00055/04

 XXXX1   00467/04 00450/04

 ZBUF    00660/07 00135/04 00139/04 00142/04 00733/04 00737/04 00001/05
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